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LECTURE I.

Delivered on March 4th.

MR. PRESIDENT, LADIES, AND GENTLEMEN.—One of the natural outcomes of the efforts of naturalists to organise the study of the lower forms of life has been the desire, manifested in many different ways, to classify and arrange the vast wealth of material which is available for study. The orderly arrangement of the living world into properly labelled classes has been the aim of a very long line of students of nature. There is an attraction about this marshalling into ordered array which has engaged the attention of even the greatest of naturalists; has limited the activities of lesser ones; and has cramped, confined, and stultified the whole life work of some of the least among them.

Systems have come and gone; first one set of attributes and then another has been claimed as furnishing the true guide to the position of a living thing in the vast assemblage of the forms of life. It is not proposed to follow the rise and fall of the many methods of classification, for it is only with the comparatively modern that the present investigation has any concern. It is assumed that the system of classification into the fabric of which an attempt has been made to weave one definite thread is, as Huxley expressed it some 40 years ago, "based upon purely structural considerations, and may be designated a morphological classification." Following this guide we may limit ourselves to a consideration of the arrangement of living things by a study of their structure.

STRUCTURE AND FUNCTION.

Now the "structure" of an animal or plant consists in the ordered disposition of an assemblage of organs to constitute one composite body, and it is therefore obvious that any classification by structure is in reality a classification by organs or the assemblage of organs. Of the work of John Hunter, Huxley said, "the classification which he adopted is a classification by organs," and that is true; but it must not be lost sight of that the summation of "organs" constitutes "structure." This fact, I think, has been somewhat overlooked, indeed, Huxley himself seems to have been inclined to ignore it when he said of John Hunter's system, "it is admirably adapted to the needs of the comparative physiologist." Looked at in the way I am endeavouring to present the problem, Hunter's system is equally adapted to the needs of the comparative anatomist. Huxley also observed truly that the unrivalled collection of John Hunter "was intended to illustrate the modifications which the great physiological apparatuses undergo in the animal series"; and here, in the midst of this collection, it is unnecessary to remind anyone that Hunter—more than any other anatomist—demonstrated that the whole form and disposition of organs is dependent on the function of the organs. We have therefore come back—as every excursion in search of truth in living economy will inevitably bring us back—to the starting-point that "structure" depends upon "function." Unfortunately, such reasoning also leads to the apparently hopeless conclusion that since classification is effected by consideration of structure, and structure is dependent on function, classification itself depends ultimately on function. It is, however, only when dealing with the simplest forms of life that the very paucity of organs in which to note differences and likenesses allows us to see that the systematist is in reality separating and grouping his material by reference to function.

It is the increasing complexity of the assemblage of organs—and that alone—that saves the museum specialist from having to make the humiliating confession that he is endeavouring, under the worst possible conditions, to arrange his specimens according to the functions which they possessed during life. Hand in hand with increasing complexity there is manifested a wonderful conservatism in the living type which admits of functional alteration of structure in one organ or system of organs, while some other system retains its ancestral and primitive condition. It therefore comes about that, functional considerations producing alterations in any one system, it is by a comprehensive study of the whole of the organs of an animal that classification is achieved. It must be apparent, however, that such a method is only to be regarded as thoroughly reliable on the assumption that no functional needs can affect a complex living thing so profoundly as to alter every part of its body in harmony. It must also be noted that it is only by the complete knowledge of the entire anatomy of any form that real certainty of its position in any scheme can be secured.

How completely function may modify such a complex thing as the structure of a mammal we do not know; but there is evidence that the completeness with which it may do so may be a pitfall to the systematist. A well-marked and peculiar specialisation—such, for instance, as the dependence upon ants as a source of food—has produced profound alterations of structure in a large number of animals. It was only precise anatomy as distinct from mere superficial examination that separated Echidna from the Myrmecophagidæ with which it was originally placed; and it is still open to question if the common habit of eating ants rather than true zoological affinity is not the real bond of some of the divergent forms grouped together as the Edentata. Again, a completely aquatic life has produced far-reaching modifications of the whole body of many creatures. And though no one with any anatomical knowledge would be in danger of classifying the dugong and manatee with the whales or with the seals, still it may be doubted if the modifying effects of such a life have been properly realised in separating the Sirenia so far from the elephants and tapirs. In these instances there has been an alteration in the structure of many systems in response to the same functional need, but there are still enough organs left retaining their ancestral condition to put the true affinities of the animals beyond doubt. But it is, perhaps, not beyond the range of possibility to imagine that the modifications could become more complete, and that very little indeed might retain its primitive characters.

TRENDS OF THOUGHT IN CLASSIFICATION.

The fact that functional modifications of any one set of organs may render them unsuited to the purpose of universal classification has produced two definite trends in the study of living forms. In the first place, it has resulted in the specialist in one restricted group selecting the characters of one set of organs for his criteria of classification, while the worker in another, and perhaps nearly allied, group arranges his material by reference to an entirely different set of organs. This inconstancy of standard is apt to strike an amateur and unspecialised student of nature rather than a highly trained specialist. In the second place it has resulted in compelling the man who takes a more comprehensive view of living things to embark on a search for the underlying "type" which is modified, here in one direction, and there in another. It is unnecessary to follow the evolution of the theory of an essential plan which, old as Plato, received a fresh stimulus from the work of Goethe, and culminated in one direction with the researches of Richard Owen and others which produced the conception of the "archetype."

These two trends of thought must be briefly noted. Concerning the second, it is frankly outside the province of this paper, although it provides a most interesting study. Plan—or ancestral type—of course there is; it was almost the perfection of the development of this idea that brought about its relegation to the background of scientific thought. The "archetype" grew so complex that it became more a creed than a part of knowledge. The criticism of Herbert Spencer decreased its vitality; the advent of the ideas of Darwin caused it to be neglected, and added to its decrepitude, and the study of embryology has reduced it to-day to the position of a dead ideal of a past generation. And yet the death is no more than apparent, for its own offspring has demonstrated its vitality. As Dwight has said, "embryology, which 50 years ago was in its infancy, confirms distinctly the view of the archetype." Even if we abandon the use of the many terms and phrases that grew up around this central idea, we must still retain the fundamental principle involved. We have shifted our ground rather from the notion of an adult "unity in variety" to the conception of an embryological recapitulation.

With the other tendency of efforts at classification we have, however, more direct concern.

CRITERIA OF CLASSIFICATION OF VERTEBRATES.

For the moment we will pass by the organs and systems most used in the comparison of the lower forms of life and turn at once to the vertebrates, and especially the mammals with which this paper deals. The most superficial examination of the methods used to determine affinities among the representatives of higher orders reveals the extent to which reliance is placed upon features of the skeleton, the teeth, and the integument. This is, of course, owing to the fact that these are the parts most readily capable of preservation, and therefore most commonly available for study by the museum specialists who are responsible for most classifications. Again, since place has to be found in any scheme for the material contributed by the palæontologist, it is essential that bones and teeth should be accepted as criteria of rank. The question is, Are these undoubtedly convenient, and often sole available criteria, ideal ones upon which to base affinities?

The Skeleton.

If we regard the skeleton, as some anatomists have apparently regarded it, merely as a sort of scaffolding upon which the body is built, then we may feel comparatively safe in presuming that similarities in the design of this scaffolding will point to relationships between the bodies of which the scaffoldings were the frame work. But if we regard the osseous system as a highly plastic set of organs, which shows a wonderful ability to adapt itself, by beautiful adjustments, to every demand of stress or strain resulting from each functional poise and purpose of the limbs and trunk, then we shall have doubts as to the validity of these assumptions. Every modification of gait, every alteration of muscular adaptation produces its change. Life habits: swimming, running, climbing, and burrowing all bring about modifications regardless of zoological affinities. Even the skull is profoundly altered by such simple functional factors as the method by which food is conveyed to the mouth. Numerous instances of skeletal adaptability will occur to every one; but one, which bridges over such wide spaces that real confusion would be impossible, may be given. The tarsometatarsal of typical birds is an elongated bone into which the elements of tarsus and metatarsus have become fused. In the penguins (Spheniscidæ), which walk or waddle in mammalian fashion, the elements are partially separated and the composite bone is short as in the mammals; in the jerboas (Dipodinæ), which hop like birds, the avian proportions, and even the fusion of the elements, are present. This is an extreme instance that is so gross that it could never deceive; but it shows how bones adapted towards the same functional end could possibly be taken as indicating zoological affinities between forms which, though widely separated, are members of the same order.

The Teeth.

It is the same with teeth; for these organs subserve the all-important function of dealing with the food of the animal, and, in addition, may be developed for killing prey, for catching prey that needs no special killing, for cutting herbage, for fighting rivals, as tools employed in life processes unconnected with feeding, and even as organs of locomotion. Now, of course, any organ connected with the feeding habits of an animal—in fact, any part of the alimentary system—must be expected to vary in response to the nature of the food taken, and the method employed in taking it. A wide series of facts fulfils this expectation. It is recognised and admitted at the outset that far more than mere functional adaptations are considered in any classification by teeth; still, it is impossible to escape the conviction that too great a reliance upon the characters of these organs may very easily mislead.

The Integumentary System.

With the integumentary system it is unnecessary to deal at length; it is the happy hunting ground of the systematist. Colour, pattern, a few hairs more or less here or there, a stripe or a spot or so, have often been enough; as we might make a red head or a bald one, a grizzled beard, or a freckled face the criteria for species-making among mankind, so has the systematist used the integumentary system. There is something far more subtle in the outer covering of an animal than such treatment can take into account. As a huge sense organ, as a reflecting surface of the central nervous system, and as a medium for the display of everything for

which the life processes of the animal demand a canvas, the skin of every living creature must be considered. Among the Edentata alone we have animals with a normal hairy covering (Myrmecophagidæ), animals with coats of specialised hair (Bradypodidæ), with skins the condition of which has prompted the familiar name of "pigs" (Orycteropodidæ), with armour plates (Dasypodidæ), with protective shells (Glyptodontidæ), and with imbricated horny scales (Manidæ). In the integumentary system, again, we even have the strange fact that so conspicuous a part as the tail may become entirely lost as a normal process in functional life. The aberrant porcupine (Trichys), found in Borneo, starts life with a tail, as *T. guentheri*, but the female, at any rate, loses it, and ends as the tailless *T. lipura*.

Systems of Varying Degrees of Constancy.

Passing at once from these systems which, owing to the varying ways in which the functions that they subserve may be carried out, are plastic, and ever ready to be shaped in the varying mould of habit, to those organs which possess one function carried out on constant lines, we note immediately an enormous difference.

The teeth have to deal with food which may be of almost any character, obtained in almost any way; but the essential organ of sight or of hearing subserves one definite function effected in one constant way throughout the whole series of animals. Animals see or hear in only one way; they feed, progress, breathe, and become protected by colour, armour, or pattern in a very great number of different ways.

The constancy of the structure of the internal ear, even in widely divergent forms, has been noted by many workers, among them especially by Dr. Albert Gray; the same authority has noted the greater variability of the middle ear, while the external ear is the delight of the systematist, so many are its modifications.

The whole optic apparatus, including its accessory parts, is profoundly modified by function; but the essential organ of vision is so remarkably constant in its structure that though one might make a shrewd surmise that the eye belonged to an animal of diurnal, crepuscular, nocturnal, or subterranean habit, it would tax the powers of the systematic zoologist to assign an excised eyeball to a member of any of the main divisions of the mammalia.

It would seem, from such a point of view as I am attempting to take, that in the animal body there are systems with highly variable functions, and consequently with such highly variable characters as to form unreliable criteria for any classification other than a frankly functional one. Again, it seems there are systems of such constancy of function, and consequently of such uniformity of structure, as to furnish no clues to the finer gradations of affinity such as are required for a satisfactory scheme of classification. It is not likely, and it is not reasonable to expect, that there is any one system in the animal economy which would strike the mean between these two extremes and form in itself an absolute and safe standard by which to assign an animal to its proper place in the scheme of living things. Yet there are undoubtedly some systems which have special claims in this direction.

The brain has great title to be regarded as an organ which notes the rank of its possessor. Since it is true, in a great measure, that all evolution, the whole scale of animal types, consists in an increasing perfection of the brain, it may be said that the state of the brain will indicate at once where in the scale its possessor should be placed. The brain may be said to sum up in its complex structure all the functions and attributes of an animal; and increasing completeness of the knowledge of the brain would mean increasing perfection of classification. The work of Elliot Smith especially has made this clear. If we had to depend upon one organ only to provide all the materials for a scheme of universal classification no better choice could be made than the brain.

The Reproductive System.

Another system which has long seemed to me to deserve special attention in this connexion is the reproductive system; its functions are so simple, its needs for change so infrequent, and yet the changes that have been produced in it are obviously so profound. The reproductive system has not by any means been passed over as a guide in classification. The botanist places reliance on it; to the zoologist who deals with parasites it may furnish the most valuable guide, since even if most of the other systems of the body become reduced to mere rudiments, the reproductive system must persist in full functional development. Even in the mammalia the characters of the uterus and of the placenta are commonly used to make fundamental distinctions of the greatest importance. "So far back as the year 1816 M. de Blainville pointed out that the mammalia might be divided into three primary groups, according to the character of their reproductive organs, especially the reproductive organs of the female." It is from this work of M. de Blainville that we have inherited the divisions of ornithodelphia, didelphia, and monodelphia.

Classification by placental characters does not so directly concern us here, but Huxley has recorded his opinion of the taxonomic value of this structure in the most emphatic terms: "It appears to me that the features of the placenta afford by far the best characters which have yet been proposed for classifying the monodelphous mammalia." The study of these portions of the reproductive system has therefore already yielded important results for the systematist, but I do not think that the taxonomic value of the system is exhausted by the study of these two characters. In most instances it is practically certain that a complete study of the fœtal and adult genitalia of any debated candidate for classification would clear up all doubts as to its real systematic position.

A detailed study of the development and the adult condition of the genitalia of the whole mammalian series is obviously a stupendous task and one that is limited at every turn by the lack of suitable material. It has therefore been my aim to examine a series of types of which sufficient material could be got together, and to attempt to determine any principle which underlay the modifications that were met with. Put quite briefly, it has been forced upon me that two very different tendencies are seen in the modifications of this system: (1) the marked conservatism of the type upon which the genital system is formed; and (2) the complete transformations of which it is capable in functional emergencies. These tendencies, which at first sight seem to be opposed, need some explanation; and it is necessary to follow, briefly, the modifications of the genital system up to the point at which we commence its detailed study in the mammalia.

MODIFICATIONS OF THE GENITAL SYSTEM IN VERTEBRATES.

We may take as a simple type of vertebrate genitalia, a system which consists, in both sexes, of bilateral genital glands, which may or may not shed their products into the cœlom, but which ultimately pass these products to the cloaca, and so to the exterior, by ducts which are primarily bilateral. Such a system is found, with only minor modifications, throughout the fishes and amphibians; and, functionally, we may say that such a system is found where the ovum is extruded as a more or less gelatinous mass either into water or into some damp place. It is the simplicity of the female genital products, extruded under such circumstances, that has served to retain the simplicity of the genital system. As long as a soft gelatinous ovum is extruded into water so long may the spermatozoon penetrate its envelope and effect fertilisation after extrusion. External fertilisation, therefore, merely requires a system of genital glands and excretory genital ducts by which the genital products may escape to the exterior, and meeting in the surrounding medium insure fertilisation. But such a genital system will only suffice for aquatic animals, or animals which are aquatic or semi-aquatic during their breeding season; for an egg, so delicate that a spermatozoon may penetrate it, is far too perishable an object to be extruded in ordinary circumstances into the open air.

When an animal becomes completely terrestrial in habit it is essential that the extruded egg cell should have some protective covering to insure it against destruction by the ordinary agencies that come into play in terrestrial life. It is the addition of this protective covering that produces such great primary changes in the genital system; for the protective covering prohibits the entry of the spermatozoon after the extrusion of the ovum, and internal fertilisation becomes a necessity. This is the first great modification brought about in the genital system—a modification due to the alteration of life habit.

The vertebrates which first became, in part, independent of their aquatic environment still retained their ancestral habit of laying unprotected eggs, and this being so it was necessary for them to return to the water during the period when they were laying their eggs. It is the breeding season, and that alone, that kept, and keeps, the amphibia in touch with their ancestral environment. Some few have solved the problem by retaining the ovum within the genital passages until some degree of development has taken place (*Salamandra atra*, *Caecilia compressicauda*, &c.). Such forms must effect internal fertilisation in some way; and the modifications that have taken place especially in Caecilia among the Gymnophiona are of peculiar interest and will need future reference.

Other aquatic animals that have attempted to colonise the land have encountered the same disabilities, and here we may note, as we shall repeatedly have occasion to do, parallel developments in the invertebrates. Among the Isopoda, *Birgus latro* has become apparently a purely terrestrial form, and yet though its whole body is admirably adapted to its new life, its ancestral habit is retained; and once a year it has to return to deposit its eggs in the element from which it has so successfully emancipated itself in all other respects. A whole series of crabs showing intermediate stages of terrestrial adaptations exists, and in other invertebrate orders instances could readily be multiplied.

Of the vertebrate stock it is the reptiles as a class that first become so completely terrestrial as to be able to deposit eggs on land. Even those members of the class that lead aquatic lives return to the land to lay their eggs. The factor which permits this complete reversal of habit is the addition of the protective covering—the membranous or calcareous egg-shell—to the ovum to enable it to withstand the desiccating influences of subaerial incubation. But since this protective membrane is laid down in the female genital passages it is essential that the spermatozoon should reach the ovum when still within the passages and before the protective membrane is deposited. With this functional change great structural alterations must be brought about, for the male must evolve some means for injecting the spermatozoa into the female genital passages, and the female passages must be modified for the reception of this.

Changes in Structure to Secure Internal Fertilisation.

We may see the initiation of these changes in non-terrestrial forms, for the elasmobranchs, though thoroughly aquatic, have found it necessary to lay protected eggs (the familiar "mermaid's purses") or even to retain the ovum and embryo during certain phases of development within the maternal genital passages. In them fertilisation must of necessity be internal. In response to this need the male fish has developed the "claspers" (though the name is by no means a good one) for insertion into the female cloaca. By these claspers or seminal guides the spermatozoa are conducted from the male cloaca into the female cloaca and genital ducts, and internal fertilisation is effected. This seminal guide becomes the functional type of the male copulatory organ of the higher terrestrial vertebrates.

We have a parallel evolution among the invertebrates, many of which lay protected eggs and have to secure internal fertilisation. Among the Insecta, the development of copulatory organs has reached a high state of perfection; and it is to be noted that in many orders these organs have provided the systematist with very satisfactory guides for classification. In the invertebrata again the production of living offspring has been adopted in many forms.

Although analogous structures, the claspers of the elasmobranchs are morphologically quite distinct from the copulatory organs of the mammals. The first hint of the mammalian condition is afforded in the Gymnophiona and in Salamandra among the Amphibia. This fact has been noted by Gegenbaur, who says: "Un indice d'un organe copulateur se remarque chez les amphibiens (Salamandrines) sous la forme d'une papille faisant saille dans la cloaque." Gymnophiona has long been recognised as an amphibian which everts a portion of its cloacal wall as a copulatory organ which is some 5 centimetres long.

In the most generalised of the Reptilia (Sphenodon) no definite copulatory organ is developed, and doubtless some everted portion of the cloacal wall suffices as an intromittent organ. But in all other reptiles a specialised copulatory organ is present.

Reptilian Types of Organs.

It is of the utmost importance to note that two distinct types of copulatory organs are developed in the reptiles. The first type concerns us most directly, since it is so obviously a stage that is

in advance of that shown in the Gymnophiona or in Sphenodon, and yet is so easily interpreted as being a stage that is but little behind that seen in the monotremes, or in the more primitive insectivores among the mammals. This is the type of copulatory organ developed in the chelonians and crocodiles. (See Fig. 1.) The second type—that belonging to the snakes and lizards—we may dismiss from this inquiry with a brief statement of its general condition. Copulatory organs of this type consist of paired eversible sacs, each furrowed by a seminal groove, which are devoid of cavernous tissue and which are not developed within the cloaca. They are extremely reminiscent in some ways of the claspers of the elasmobranchs and are difficult or impossible to homologise with the copulatory organs of the mammals.

The genitalia of the chelonians and crocodiles, however, need careful study, since they seem so patently to carry on the process which, initiated in the gymnophiona, culminates in the mammalian condition. (See Figs. 1, 2, and 3.)

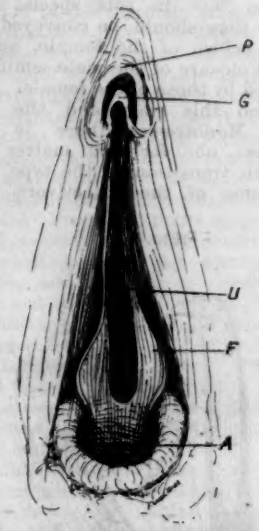
The marine chelonians possess an intromittent organ that is far more highly developed than anything seen in the amphibians. Specialisation of the ventral wall of the cloaca has resulted in the production of an erectile thickening which is marked by a median groove—the seminal groove—which runs from the cloacal orifice of the uro-genital sinus almost to the distal end of the erectile body. In some forms this ventral erectile mass becomes raised from the cloacal wall, and altogether free of it at its most caudal limit, and a projecting penis, grooved on its dorsal aspect, is produced. In many tortoises this intracloacal penis becomes further developed. The distal portion which is free of the cloacal wall becomes longer, and at the same time specialised, and prominent lips are developed along the sides of the seminal groove.

The condition present in these reptilian types is singularly like that seen in some of the least specialised birds; for the Ratitæ possess copulatory organs obviously akin to those described, and other avian orders show rudiments or modifications of this condition. The perfection of this reptilian copulatory organ is seen in some of the larger tortoises, such as *Testudo elephantina*. (Fig. 1.) In these animals the organ is extremely large, and indeed in all the tortoises the mechanical difficulties imposed by the rigid carapace appear to be the functional cause of the great development of the penis. The cloacal orifice is a transverse slit situated at the root of the tail, and in the ordinary quiescent condition the copulatory organ is entirely hidden within the cloaca, but even in these circumstances a very slight eversion of the cloacal margins reveals the free extremity of the penis in the male. In the female the whole structure is considerably reduced.

Comparison of Mammalian with Reptilian Organs.

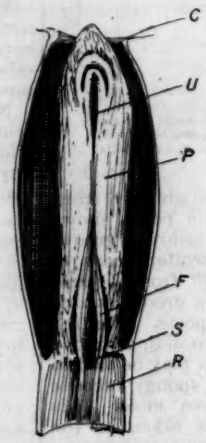
In the copulatory organs of these animals all the essential parts of the mammalian external genitalia may be recognised. The penis stretches from the uro-genital sinus orifice to its free tip just within the cloacal margin, and the proximal portion of its erectile tissue obtains a skeletal fixation point on the pelvic girdle within the carapace. It is obviously strictly comparable with the whole of the erectile mass of the mammalian penis. Its dorsal surface is marked with a groove—the seminal groove—which is continuous with the uro-genital sinus orifice and runs towards the free extremity of the penis, but comes to an end some little distance short of that extremity. Along the margins of this groove bilateral free folds are developed; these are sometimes termed the plicæ recto-urethrales, but

FIG. 1.



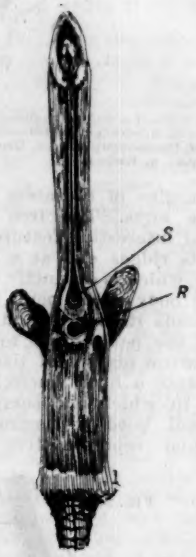
The penis of *Testudo elephantina* freed from its connexions with the cloacal wall. In the male of this species the "seminal guides" pass within the anal margin. P, Fold over terminal portion (prepuce). G, Terminal portion (glans). U, Seminal groove (penile urethra). F, Seminal guides (inner genital folds). A, Anus. (From a specimen in the Museum of the Royal College of Surgeons of England.)

FIG. 2.



Penis of a species of *Testudo* within the cloaca and exposed by removal of the dorsal wall of the cloaca. The rectum is opened and the "seminal guides" are seen passing into its lumen. C, Cloacal orifice. U, Seminal groove. P, Penis. F, Seminal guides. S, Uro-genital sinus. R, Rectum. (From a specimen in the Museum of the Royal College of Surgeons of England.)

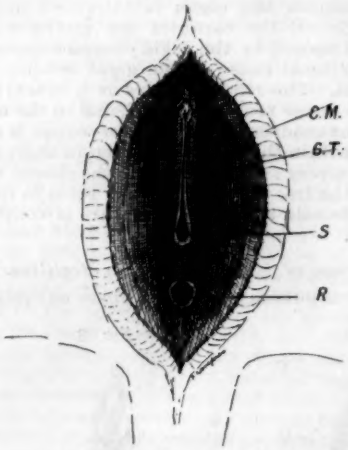
FIG. 3.



Penis of a species of *Emys*. The cloaca has been split into an anterior and a posterior portion by incisions along its lateral margins, and the anterior wall (penis) turned upwards. S, Orifice of uro-genital sinus. R, Orifice of rectum.

seminal guides is the best name that we can give them at this stage. These folds terminate towards the tip of the penis at the point at which the groove ceases; towards the root of the penis they become more prominent and, skirting the sides of the uro-genital sinus, they disappear within

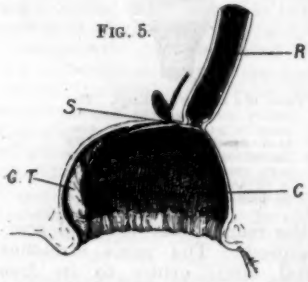
FIG. 4.



The cloaca of a chelonian opened to show the cloacal roof and the intracloacal genital tubercle *in situ* (semi-diagrammatic). C M, Cloacal margin. G T, Genital tubercle. S, Uro-genital sinus. R, Rectum.

the margins of the anus or meet slightly in front of the anus. The free tip of the penis shows several interesting features. The seminal groove and its ridges end at a spongy swollen mass of tissue which is distinctly marked off from the rest of the body of the penis by a deep groove which surrounds its lateral and distal aspects. The free tip of the penis distal to the surrounding groove is a narrow margin of tissue which may be said to constitute a hood encircling the spongy erectile mass in which the seminal groove ends. This terminal hood I imagine may be taken as the chelonian representative of the human prepuce, and in harmony with this the distal spongy mass appears to be the equivalent of the human glans. The seminal groove becomes the penile aspect of the human urethra and the fused seminal guides constitute its floor. In the female these structures are reduced as a whole; the seminal guides are not so well developed, and it is to be noted that, as a rule, they do not extend further back than the orifice of the uro-genital sinus. The copulatory organ is smaller in the female and the seminal groove is not so deep as in the male.

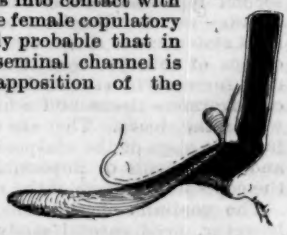
FIG. 5.



The chelonian cloaca seen from the left side in section. The penis is in the quiescent intracloacal condition. The products of the uro-genital sinus in this state are shed into the cloaca. R, Rectum. C, Cloaca. S, Uro-genital sinus. G T, Genital tubercle.

Of the functional significance of the parts there can be no doubt. The erectile copulatory organ of the male is protruded and everted from the cloaca, and in this action the seminal guides tend to close over the deepened seminal groove and to convert what is, in the unerected condition, a mere depression, into a complete tunnel. As the male copulatory organ is passed into the female cloaca it comes into contact with the dorsal aspect of the female copulatory organ, and it is highly probable that in these creatures the seminal channel is completed by the apposition of the seminal groove and guides of the male with those of the female.

FIG. 6.

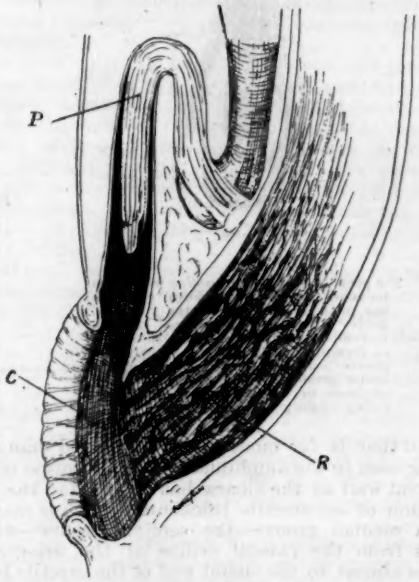


Chelonian cloaca seen from the left side in section. The penis in the functional extroverted condition. The seminal guides now meet and convey the products from the uro-genital sinus to the end of the penis.

In the ordinary quiescent condition of the parts the products from the male uro-genital sinus merely pass out of the orifice of that chamber into the cloaca, and so to the exterior. (Fig. 5.) In this special act it is necessary that they should be conveyed into the corresponding orifice of the female, and this is effected by the closure of the male seminal guides, possibly assisted by those of the female. (Fig. 6.)

Now, between this stage and the condition seen in the Monotremes there is no very wide difference; nor for that matter is there any very sudden transition to the type of cloacal genitalia of some of the Insectivora Speaking

FIG. 7.



A reconstructed section of the cloaca of *Crocidura bottigi* (shrew from Abyssinia) showing the intracloacal penis. P, Penis. C, Cloaca. R, Rectum.

broadly, the advance made consists of the closing over and meeting of the seminal guides in the male, so that the seminal groove is closed in whole (Insectivora) or in part (Echidna); but the cloaca

still exists, and in the quiescent state the external genitalia are still retained within the cloaca.

In Echidna the intracloacal genital tubercle of the male presents a completed penile channel in distal portion, but at its proximal end the seminal guides have not completely united over the seminal groove and a state of normal hypospadias exists at the root of the penis, this deficiency being obliterated with erection of the organ. In the cloacal Insectivora, such as *Blarina* and *Crocidura*, the closure of the seminal canal is completed in the male, and the hypospadic condition of Echidna is lost. (Fig. 7.)

We have therefore in some of the mammalian orders a retention of a cloacal condition, and in these an advance has been made on the chelonian condition mainly by the closing in of the seminal groove. In the cloacal Insectivora the penis has reached a high degree of development and is usually remarkable for its great length, so much so that it is retained, more or less coiled, in a diverticulum of the ventral part of the cloaca. It is very important to recognise that the cloacal condition *does* exist among the Insectivora, and I have come to think that the appreciation of the differences to be detected in the methods of formation of the external genitalia within the limits of this group forms a basis for a better understanding of the inter-relations of the other mammalian groups. To this point it will be necessary to revert later on. It is equally important to recognise that the chelonian condition is not only practically identical with the lowest mammalian type of external genitalia, but it is also represented as an early stage in the embryonic development of the external genitalia of all mammals. From a simple stage in which an intracloacal genital tubercle, bearing a seminal groove marked laterally by seminal guides, is present, the adult external genitalia of all mammalian orders are derived; but the method of derivation and the final condition produced present very striking differences, first, within the limits of the group Insectivora, and second, within the whole compass of the mammalia. It is necessary to describe the stages of the development from this simple condition as they are displayed in various mammalian embryos.

I have come to believe that there are two main types of development and two main types of resulting external genitalia; that all mammals may be placed in the one group or the other; and that an examination of the adult genitalia will generally, and an examination of the embryonic stages will always, reveal definitely into which group a particular species falls.

A POST-GRADUATE COURSE IN VENEREAL DISEASES.—A special course of lectures and demonstrations for post-graduate and advanced students will be given at St. Mary's Hospital on Mondays and Thursdays at 4 P.M., beginning April 27th and ending July 2nd. Dr. Sidney P. Phillips will deal with syphilis of the abdominal viscera, Mr. J. Ernest Lane with the treatment of venereal diseases and syphilis of the tongue, Dr. Wilfred Harris with syphilis of the nervous system and parasyphilis, Dr. W. J. Gow with syphilis in relation to obstetrics and gynæcology, Dr. E. G. Graham Little with syphilis and the skin, Mr. A. Fleming with the biological and laboratory aspects of syphilis, and Mr. Leslie J. Paton with the ophthalmology of syphilis. Applications for admission to the course, for which the fee is 4 guineas, should be made to the school secretary, a reduction being made in the case of former St. Mary's men.

AN ANALYSIS OF THE PROBLEM OF THE MINIMAL LETHAL DOSE AND ITS RELATIONSHIP TO THE TIME FACTOR.*

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AND
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IN a previous paper[1] evidence has been brought forward to show that over a wide range of weight in any given species animals of different size can readily be employed for the standardisation of toxic substances and antitoxins, instead of animals of an arbitrarily selected weight as has hitherto been necessary. All that is required is that the doses given shall be calculated in relation to the body surface and blood volume of the individual animals employed. For this purpose we have suggested the use of the formula $D = \frac{d}{W^{0.72}}$, where D represents the dose in relation to the surface of the individual, W is the weight of the animal, and *d* is the actual quantity of drug administered. From this formula one calculates with equal readiness the "surface dose" † (D) for any actual quantity of drug (*d*) administered, or the quantity (*d*) of drug which must be given in order to produce a dosage (D) in relation to the surface of the individual animal concerned. But in the standardisation of toxins, antitoxins, and drugs by means of animal experiment another factor of the greatest importance comes into play—namely, the time to death. Accordingly, it has hitherto been the accepted custom not only to employ animals of an arbitrarily selected weight, but also to fix upon an arbitrary time to death as a means of rendering such experiments comparable *inter se*. This method, the only accurate one hitherto available, we owe to the pioneer work of Ehrlich, which has been fundamental for the study of the problems involved in the phenomena of protection and the action of toxins. But how far this method of comparison actually falls short of affording a true measure of relative toxicity will appear from the following considerations, which in our opinion have long demanded a detailed investigation.

First, if one takes two samples of diphtheria toxin and determines the dose of each toxin which will kill a guinea-pig of standard weight in standard time (and would therefore be considered equivalent doses), it is found that equal multiples or submultiples of these doses are no longer equivalent in their action in the animal body. Accordingly, the equivalence thus determined is merely a coincidence, and not in any sense a real equivalence, since if any other lethal times be chosen the equivalent doses experimentally determined will be found to have an entirely different ratio to each other.

Thus, taking two samples of diphtheria toxin, we

* A more detailed account of this work is published in the Biochemische Zeitschrift, 1914, vol. lx., p. 112.

† Dose calculated in relation to body surface (and blood volume).

arrive at the following results for the equivalent doses at different times.

TABLE I.—*Showing Comparative Strengths of Diphtheria Toxins (B) and (C).*

To kill a guinea-pig of 250 grm. in hours.	Toxin B. Dose in relation to surface × 10^7 in c.cm.	Toxin C. Dose in relation to surface × 10^7 in c.cm.	Ratio between equivalent doses = Dose of B. / Dose of C.
36	3510	3233	1·09
48	2960	2241	1·28
60	2632	1867	1·41
72	2522	1672	1·51
96	2413	1472	1·64
120	2359	1366	1·73
144	2327	1303	1·79

It will at once be seen that the ratio of the equivalent doses of the two toxins increases steadily as the time to death is increased. Thus, when the standard time for death—namely, 96 hours—is taken, the equivalent dose of toxin B is about 65 per cent. greater than that of toxin C. But if 36 hours is selected as the lethal time the equivalent dose of toxin B is only about 9 per cent. greater than than of toxin C, while if 6 days is taken as the death time, the dose of toxin B is approximately 80 per cent. larger than that of toxin C.

Again, if instead of comparing the effect of two different samples of toxin on a given species we take the observations of Wolfgang Ostwald and Dernoscheck[2] on the small crustacean Gammarus poisoned by immersion in sea-water of varying *concentration*, and thus compare the effect of one and the same toxic substance on the male and female animal respectively, we find the following results:—

TABLE II.—*From Wo. Ostwald's Observations on Gammarus.*

Concentration of sea-water in °/₀₀.	Time to death in the male animal in minutes.	Time to death in the female animal in minutes.	Ratio between death times $\frac{\delta}{\varphi}$
58·7	36	36	1·00
47·2	48	46	1·04
40·1	79	53	1·49
35·4	120	77	1·56
33·0	147	86	1·71
28·3	328	185	1·76
25·9	lives.	328	∞

Table II. thus shows that for the same concentration of the toxic fluid the ratio between the lethal times for the two sexes steadily increases as the concentration of the toxin is diminished. Thus, with a concentration of 58·7 the time to death is the same in the two sexes, while with a concentration of 40·1 it takes about 50 per cent. longer to kill the male than the female, and with a concentration of 28·3 over 75 per cent. longer.

Accordingly, whether we take times to death in a given species of animal, and compare the equivalent doses of two toxins which will kill in these times; or take different concentrations of one and the same toxin and compare the times to death in male and female animals of the same species, we find that the standard method hitherto employed cannot afford a true measure of relative toxicity. This conclusion necessarily follows from the fact that with different death times the ratio between the equivalent doses of the toxins is found to vary; and with different concentrations of the toxic fluid the ratio between death times is also found to vary. As these respective variations are extremely marked it is evident that the point requires no further elaboration.

It follows that a method of calculation must be sought by means of which toxicity can be estimated quite independently of any arbitrarily selected death time or any particular dosage chosen from comparison. After a prolonged consideration of a large mass of material one of us (G. D.) arrived at the following formula for the relationship between concentration and quantity of dose and the time required to cause death (or to produce any other desired effect in animals of any given species)—namely, $\frac{1}{D_0 - a} - \frac{1}{D_1 - a} = k\,(T_0 - T_1)$, where D_0 and D_1 are "surface doses" (doses expressed in relation to body surface corresponding to the times T_0 and T_1, in which the death of the animal (or other desired effect) is produced, a is a figure the value of which is dependent both on the particular species of animal employed and the particular toxin, and k is a constant to be determined for the particular toxin and the particular species of animal employed. Expressed in words, the formula simply states that *to every equal increment in time there corresponds a definite decrease in the active dose* $(D - a)$.

This formula we have tested over a very extensive series of observations of the most diverse character, and find that it affords an extremely satisfactory method of calculation. As will be shown below, it allows equal significance to be placed on each individual observation in a long series of animals of different weights, entirely independent of the dose and death time.

Before proceeding further it is now desirable to consider briefly the quantity a. In determining the minimal lethal dose of any toxic substance (or the dose required to produce any given effect) one arrives, by gradually diminishing the dosage, at a quantity less than the critical dose in question, which appears to be inactive. The animal does not die, or the other desired effect, whatever it may be, is not obtained. How closely the size of a, as determined by our method, approaches the size of the minimal effective dose (M.L.D. or other) depends not only on the character of the particular substance under investigation, but also on the character of the effect desired—whether this be death or any other manifestation of toxic action. But to the precise meaning of a we shall return.

The importance of discovering the relation between the concentration or quantity of dosage and the corresponding time to death has been fully realised by several of previous workers, and especially by Arrhenius,[3] Warren,[4] Wolfgang Ostwald,[5] and Ostwald and Dernoscheck.[2] Of these, Warren, Ostwald, and Ostwald and Dernoscheck suggest definite formulæ for the case of small crustaceans poisoned by immersion in solutions of various salts.

Warren's formula is $\frac{1}{T} = k\,(c - n)$, where T is the time to death, c the concentration of the salt solution, n a number constantly subtracted from c, and k a constant. This formula states that the

time to death is inversely proportional to the concentration diminished by n. But this is not the case.

Ostwald and Dernoscheck's formula is $\frac{1}{T} = k\,(c-n)^m$, and it is clearly a generalisation of Warren's formula (which they criticise), obtained by the introduction of a varying power m instead of the power 1. This formula they substitute for Ostwald's original formula $\frac{1}{T} = k.c^m$, in recalculating his observation on Gammarus. They show how much more satisfactory is the agreement between observed and calculated figures when this formula is used instead of Warren's formula or even Ostwald's own earlier formula.

As regards the significance of n Warren appears to consider it to represent the concentration of salt *normal* to the animal observed (Daphnia), while Ostwald and Dernoscheck arrive at its value by a process of calculation. It does not, however, appear that the latter observers attach any rational significance to the meaning of n in their formula.

One of us (E. W. A. W.) in 1901,[6 7] in attempting to clear up the difficulty which obtained regarding the relation between the amount of antitoxin or antibody required to neutralise one M.L.D. in the body of an animal, and the amounts required to neutralise multiples of the M.L.D. showed that a certain non-effective dose (a) must always be subtracted in calculating the amount of antitoxin required. As, however, no attention was then given to the time factor, the results obtained by administering doses on this system only held good over a quite short range of multiples of the M.L.D. But in the formula devised by the other of us (G. D.) the value of (a) is made to be dependent on the *rate of killing*, and not merely on the fact that death does or does not occur.

We now proceed to show how successfully this formula may be applied, not only to our own experimental results, but also to a mass of diverse published observations. In all the cases which we have examined where a sufficient range and number of observations is provided to afford a material suitable for calculation the formula holds good, and represents the experimental findings in an extremely satisfactory manner.

In Table III. is given a series of our own experiments with a diphtheria toxin (B). The doses (D) are given as calculated in relation to surface by the formula $D = \frac{d}{W^{0.72}}$ where W is the weight of the animal in grammes, and d is the *actual dose* administered.

The results in Table III. show clearly that the formula proposed represents the experimental data for the grouped experiments in a very satisfactory manner. Although the animals employed cover a range of weight from 200 grm. to 530 grm., the difference between the death times calculated by the formula and those actually observed averages only 0·38 per cent. Similar results were obtained for two other samples of diphtheria toxin (A) and (C). In the case of toxin (A) it was found that $k \times 10^7 = 330$, and $a = 1140$, while for toxin (C) $k \times 10^7 = 316$ and $a = 1045$. For toxin (A) the average death times ranged from 85 to 220 hours, and for toxin (C) from 67 to 148 hours.

But, as has already been pointed out above, it is impossible to draw any reliable conclusion regarding the actual strengths of the three samples of

TABLE III.—*Diphtheria Toxin (B) in Guinea-pig: Subcutaneous Injection (Own Experiments).*

$\frac{1}{D_0-a} - \frac{1}{D_1-a} = k\,(T_0-T_1)$. $k \times 10^7 = 665$, $a = 2200$ ($T_0 = 36{\cdot}3$, $D_0 = 3555$).

No.	Weight of animal in group.	Actual dose (d) in c.cm.	Dose (D) in relation to surface $D = \frac{d}{W^{0.72}} \times 10^7$	Hours to death.	Dose (D) in relation to surface grouped animals.	Hours to death grouped animals = T observed.	Hours to death calculated for grouped animals = T calculated.	Percentage difference between T calculated and T observed.
1	440	0·01900	2370	30				
2	355	0·01750	2552	118	2496	76·0	76·0	0·00
3	310	0·01600	2565	80				
4	200	0·01200	2640	100				
5	470	0·02215	2640	38				
6	400	0·01990	2661	55	2659	57·8	58·0	0·34
7	330	0·01750	2696	38				
8	230	0·01375	2745	64				
9	530	0·02560	2800	38	2788	51·0	50·8	0·39
10	435	0·02240	2820	51				
11	255	0·01575	2920	40				
12	215	0·01400	2940	42	2953	45·0	45·2	0·44
13	460	0·02480	3000	53				
14	430	0·02375	3015	44				
15	235	0·01535	3020	38	3039	43·3	43·1	0·46
16	400	0·02270	3040	44				
17	360	0·02135	3080	47				
18	415	0·02480	3220	44				
19	425	0·02520	3230	49				
20	435	0·02590	3258	32	3283	39·0	39·1	0·26
21	370	0·02415	3424	31				
22	415	0·02715	3525	49				
23	425	0·02780	3560	30	3555	36·3	36·3	0·00
24	435	0·02845	3580	30				
		Average						0·38

diphtheria toxin A, B, and C from a comparison of the doses required to cause death in any given fixed time; for, as already stated, their ratios to one another vary for each particular time. A measure of relative strength can, however, be obtained by comparing the size of the three different constants k, which are dependent on the size of the effective doses of the toxins. These constants vary in this sense, that in toxic substances of the same quality the weaker toxin has a larger k in the formula, while the stronger toxin has a smaller value for k. This comparison is the only one that can be obtained, which is independent, not only of the weight of the animal (in any given species), and of the dosage, but also of the time factor. It gives an expression for the relative strengths of the three samples of toxin. These are related to each other as $k_A : k_B : k_C$. Expressing the facts in words, one is able to say that if we have two samples of toxin —for example, two diphtheria toxins P and Q where the value of k for P is the *double* of that for Q—then for each given increment of time the *increase* in the reciprocal of the effective dose in the case of P will be the double of the *increase* in the reciprocal of the effective dose in the case of Q. The effective dose is given in each case by the expression $(D - a)$.

In regard to the significance of a in the formula, this quantity represents the "non-effective" portion of the dose—that is to say, the dose which in itself

is insufficient to cause death (or other desired effect). Accordingly, its size varies with the resistance of the sex and species, being larger for the more resistant type and smaller for the more susceptible. Further, with one and the same toxic substance, a is greater the less the toxicity of the particular sample which is employed. Thus, in the case of the three samples of diphtheria toxin dealt with above it was found that for C, the most active toxin, a had a value of 1045, while for A, which was somewhat less active, it was 1140, and for B, much the weakest sample, it was 2200.

TABLE IV.—*Synthetic Adrenalin in the Mouse: Subcutaneous Injection (Schultz's Experiments).*

$$\frac{1}{D_0 - a} - \frac{1}{D_1 - a} = k\,(T_0 - T_1).\quad k \times 10^3 = 48,\ a = 900$$
$$(T_0 = 30{\cdot}7,\ D_0 = 1677).$$

Group.	Number of animals in group.	Dose (D) in relation to surface grouped animals $D = \frac{d}{W^{0.7}} \times 10^3$.	Minutes to death. Grouped animals. = T observed.	Minutes to death calculated for grouped animals. = T calculated.	Percentage difference between T calculated and T observed.
1	6	1677	30·7	30·7	0·00
2	5	1886	25·0	25·0	0·00
3	5	2051	22·0	22·0	0·00
4	6	2357	18·8	18·2	3·30
5	3	2634	14·3	15·9	10·10
		Average			2·68

In Table IV. is given an analysis of experiments by W. H. Schultz[9] with a synthetic adrenalin (ethyl-amino-aceto-catechol) in the mouse. Twenty-five experiments done about the same time (Jan. 5th and 16th, 1909) on animals not previously injected with the drug are taken from his series (his Table XIV.). The observations were made on mice varying in weight from about 12 grm. to 25 grm. After they had been arranged in order according to "surface dosage" they were collected into five groups by averaging the "surface doses" and lethal times. From these data the constant k was determined, and by its use the theoretical time to death was calculated for each group. It was found that the average difference between the calculated and the observed lethal times was only 2·68 per cent. From this it follows that the formula proposed also applies very satisfactorily to the case of synthetic adrenalin, where the death times are extremely short (minutes), as contrasted with the long death times (up to several days) with diphtheria toxins.

The value of employing the method of calculation here brought forward is well illustrated by comparing the observations of Madsen and Noguchi[10] on filtered and unfiltered samples of cobra venom. As already pointed out, it takes account not only of the size and surface area of the animal concerned, but also of the time required to produce the desired effect (e.g., death), while at the same time it gives results which can be applied (within a given species) quite independently both of lethal time and of the size of the individual animal employed.

Madsen and Noguchi came to the conclusion from their experiments with *cobra venom* that the toxicity of the venom was not sensibly diminished by filtration through a Chamberland filter. This result contrasted strongly with their further observation, that after similar filtration *crotalus venom* was diminished in toxicity by as much as 50 per cent. The data for cobra venom (from their Tables XIX. and XXIX.) were, therefore, calculated by our formula. For the unfiltered venom k was found to be 110 and a 185, while for the filtered venom k was 130 and a 270. These results show that the toxicity of the cobra venom was in reality *greatly reduced* by the process of filtration, since the "surface dose" of filtered venom which is needed to kill a guinea-pig with certainty is much greater than the surface dose required for unfiltered venom.

In view of the evidence which has now been given it is unnecessary to adduce further detailed calculations of experiments in support of the method and formula here proposed for dealing with questions of dosage and toxicity. But it should be mentioned that the formula is in excellent accord with all the published observations which we have analysed where an adequate series of data is available. Among the observations which we have examined from this point of view and which we find to fit the formula are the following: Knorr's experiments with tetanus toxin injected subcutaneously in the mouse[11]; Elliott, Sillar, and Carmichael's experiments with krait venom injected subcutaneously in rabbits[12]; Fraser and Elliott's experiments with the venom of Enhydrina valakadien injected subcutaneously in rabbits[13]; natural adrenalin in the mouse, Schultz[9]; sulphate of physostigmia subcutaneously in rabbits, Fraser[14]; caffeine subcutaneously in guinea-pigs and cats, Salant and Rieger[15]; cobalt nitrate subcutaneously in guinea-pigs, Bock[16]; and potassium chloride injected intravenously in rabbits, Hald.[17]

From these facts we conclude that so far as evidence at present goes the formula is one of general application in regard to dosage and death time in warm-blooded animals. That it holds not only in regard to lethal effects but also in the case of ordinary pharmacological and toxic action in general is seen from the experiments of Schultz[9] on the mydriatic action of synthetic adrenalin in the excised frog's eye. These experiments are analysed and calculated below in Table V., where it is seen that the percentage differences between Schultz's observed times and the times calculated by our formula are in every case but one very small indeed, and even taking in the one obviously divergent figure give an average error of only 2·73 per cent.

TABLE V.—*Mydriatic Action of Synthetic Adrenalin on the Excised Frog's Eye (Schultz's Experiments).*

$$\frac{1}{D_0 - a} - \frac{1}{D_1 - a} = k\,(T_0 - T_1).\quad k \times 10^4 = 805,\ a = 2{\cdot}2,$$
$$(T_0 = 20,\ D_0 = 500).$$

Group (Schultz).	D = relative dose—i.e. concentration of the solution employed.	Time to maximum mydriatic effect = T observed minutes.	Time to maximum mydriatic effect calculated = T calculated minutes.	Percentage difference between T calculated and T observed.
1	1000	21	18·8	11·70
2	500	20	20·0	0·00
3	200	24	23·8	0·84
4	40	50	50·4	0·99
5	8	232	231·7	0·13
	Average			2·73

One further example of the application of the formula may be given in a case where the animal

concerned (a crustacean, Gammarus) was immersed in the toxic fluid the action of which was to be tested. The observations are taken from the experiments of Wo. Ostwald and Dernoscheck.[2] These authors deduced from their observations the formula to which reference has already been made: $\frac{1}{T} = k\,(c - n)^m$. The formula in question is based on a consideration of the phenomena of adsorption. Their data can, however, be expressed even more satisfactorily by the formula here proposed than by their own.

Our calculations give for male Gammarus $k \times 10^6 = 841$, $a = 24{\cdot}6$, and for female Gammarus $k \times 10^6 = 1055$, $a = 23$. Using these constants we find that the average difference (disregarding signs) between death time observed and death time calculated for male Gammarus is 4·48 in the case of Ostwald and Dernoscheck's calculation and 4·50 in our own. But in the case of the females Ostwald and Dernoscheck's calculation gives an average difference of 5·94, while ours gives an average difference of only 4·42. Moreover, if one examines in detail the operation by which they arrive at their results, one finds that the n in their formula is actually chosen of a smaller size for the more resistant male than for the less resistant female animal, being in the two cases 23·88 and 24·557 respectively.

Now, in our opinion n (a in our formula) can only have a rational significance if it represents the "non-effective" fraction of the dose, and this must obviously be greater for the more resistant sex. In our operation, on the other hand, a possesses, as it should, a higher value for the males than for the females—namely, 24·6 for male Gammarus against 23·0 for the female.

Furthermore, it is a matter of no little importance that the new formula applies equally well to the results obtained by the inoculation of warm-blooded animals with a long series of toxic substances as to the observations now under consideration. It offers a ready explanation of the facts observed in each case, and possesses a simple and obvious interpretation.

Conclusions.

1. In warm-blooded animals dosage (D) must, as shown in a previous paper,[1] be calculated in relation to the body surface according to the expression $D = \frac{d}{W^{0{\cdot}72}}$, where D is the "surface dose" of the drug, toxin, or antitoxic substance used, d represents the actual quantity administered, and W is the weight of the animal in grammes.

2. No method, however, at present exists by which a *true* comparison of the relative toxicity of different substances (or of different samples of the same substance) can be instituted. The methods hitherto employed depend on the selection of an arbitrarily fixed weight of animal and lethal time, and do not afford a rational basis for the accurate measurement and standardisation of drugs, toxins, and antitoxins.

3. The formula here proposed

$$\frac{1}{D_0 - a} - \frac{1}{D_1 - a} = k\,(T_0 - T_1),$$

offers a simple means of making such measurements. In this formula D_0 and D_1 are the concentrations of the drug or "surface doses," corresponding to the times T_0 and T_1 in which the death of the animal (or other desired effect) occurs; a is a figure representing the "non-effective" dose of the substance employed, and k is a constant to be determined for the particular substance and species of animal under investigation.

4. The formula states that to every equal increment in time there corresponds a definite decrease in the "active dose" ($D - a$).

5. This formula is here shown to afford a satisfactory expression for all the varied and diverse experimental data to which it has been applied.

6. The use of the formula renders it possible not only to carry out the comparison desired, but also to make use of animals of every size over a wide range of weight within a species, and all observed death times, in the standardisation of toxic substances, antitoxins, and the like.

7. By this means a great saving both of time and animal material is introduced, since an equal value, independent of the actual lethal time and weight of individual animal, can now be attached to all the experimental data.

8. The results obtained will also possess a greater validity and a wider application than it has hitherto been possible to attain by the use of an arbitrary death time and a fixed standard weight of experimental animal.

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THE special annual service for members of the University of London will be held in Westminster Abbey, at 6 P.M., on Wednesday, May 13th, when the sermon will be preached by the Bishop of London. Admission will be by ticket only, which can be obtained by graduate or undergraduate members of the University on application to the Secretary of the Westminster Abbey Service Committee, 88, Gower-street, W.C. A stamped addressed envelope should be enclosed.

THE PRICE OF RADIUM.—The possibility of cheapening radium in the interests of suffering humanity is foreshadowed by a scheme for acquiring mining properties, covering an area of 42,000 acres, in the centre of what is acknowledged to be the greatest radium deposits known in the world—St. Joachimsthal, in Bohemia. They surround the great radium mines of the Austrian Government, and investigations have proved conclusively that the deposits of the Government are continued into the properties at many points. For over 200 years silver, bismuth, cobalt, tin, nickel, and iron have been extracted from this rich mining district, of which only a small portion has been worked at present. Mr. Karl Stegl and Professor Dr. Krusch have examined the properties, which include 30 opened-up mines and 687 mining claims situated in 34 different districts. Portions of the properties have been worked for many years for various minerals, and a large number of shafts and galleries are already in existence. For the last two years all the development work has been concentrated on the discovery of the pitchblende deposits, from which the pure radium is obtained, and it is claimed that one ton of ore yields over 200 milligrammes of radium bromide. Works and laboratories fully equipped with modern appliances are to be installed without delay.

IMPROVED METHODS OF STANDARDISING BACTERIAL VACCINES IN HÆMOCYTOMETER CHAMBERS.[1]

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THE simplest scientific method of standardising bacterial vaccines is the direct enumeration of the bacteria in some form of hæmocytometer chamber. It was first suggested in 1908 by Mallory and Homer Wright,[2] who employed a well 0·02 mm. deep, an optically plane coverslip, a 1/6-inch dry lens, and no staining fluid; also by Leith Murray[3] (1908), who used a common Thoma-Zeiss hæmocytometer with a well 0·1 mm. deep, an ordinary coverslip for microscopical work which, though specially chosen, is not optically plane, a 1-12th oil-immersion lens, and a staining solution of weak Giemsa. Owing to certain defects in these methods Glynn and Cox[4] in January, 1911, advised using the Helber chamber 0·02 mm. deep with a special optically plane rigid coverslip 0·18 mm. thick, and a diluting fluid of weak carbol thionin. The Helber chamber was originally designed for the enumeration of blood plates; it and the cover-slips are made by Zeiss. Obviously as every laboratory worker possesses a Thoma-Zeiss hæmocytometer it is more economical to use this same apparatus for standardising vaccines. But for reasons to be subsequently stated the Thoma-Zeiss chamber, which is 0·1 mm. deep, is less suitable than the Helber chamber, which is only 0·02 mm. deep. Both these pieces of apparatus, however, give more accurate results than Wright's method of mixing measured volumes of bacterial emulsion and normal blood. When standardising bacteria with a hæmocytometer chamber it is essential in order to diminish eye strain and increase accuracy first to stain the bacteria, and second to count them with an oil-immersion lens. The ordinary coverslips supplied with a Thoma-Zeiss chamber are too thick to permit the use of an oil-immersion lens, and it has been necessary to devise a new coverslip suitable for use with most oil-immersion lenses.

Three points, therefore, have been considered: (1) The most suitable staining fluid for diluting the bacterial emulsion in a hæmocytometer pipette; (2) the most suitable optically plane rigid coverslip for use with the Thoma-Zeiss hæmocytometer chamber 0·1 mm. deep and an oil-immersion lens; and (3) the most suitable form of Helber chamber 0·02 mm. deep and optically plane rigid coverslip for use with an oil-immersion lens.

Staining of the bacterial emulsion.—After trying various methods we recommend a diluting fluid for the hæmocytometer pipettes of weak carbol thionin prepared as follows:—Stock Solution A: saturated thionin blue (Grubler) in absolute alcohol. Stock Solution B: 1 per cent. of pure carbolic acid in clear tap water. Before use take 1 part of Solution A to about 40 of B for most organisms, or 1 part of A to about 20 of B for streptococci. The mixture will keep a considerable time, but should always be filtered before use; frequent filtration, however, may weaken the stain unless the filter paper is saturated with thionin. It is important to keep the bacterial emulsions, stock solutions, counting chamber, and pipettes absolutely free from dust, particles of cotton-wool, &c. The most satisfactory method of preparing an absolutely dust-free carbolic acid solution is to allow a large quantity to stand for a few days in a glass measuring cylinder, when the dust sinks to the bottom or rises to the top. The capacity with which bacteria take up the carbol-thionin stain varies somewhat with the type and sometimes the strain of the organism, or with the age of the culture. Streptococci require stronger stain than most bacteria. If the proportion of thionin is too high the bacteria are stained almost instantaneously, and an abnormal number adhere to the under surface of the coverslip; agglutination also occurs.

Agglutination is always present if too much thionin is employed. We have found by actual experiment that it does not depend upon the small quantity of alcohol or carbolic acid present in the solution, but upon the intensity of the staining. Agglutination will also occur if the diluting pipette has been washed out with absolute alcohol and is not properly dried before use. We are convinced that carbol thionin is superior to any other stain as methylene blue, fuchsin, or even the fashionable Giemsa. It stains more intensely and is quite free from precipitate; further, the proportion of thionin can easily be adjusted to the staining capacity of the organism. The great defect of the Giemsa solution is the tendency of the stain to precipitate even after filtration if the amount of Giemsa is strong enough to more than faintly colour the bacteria. We have been unable to remove the precipitate by substituting prolonged centrifugalisation for filtration.

Brownian movement may be troublesome. This, as can easily be demonstrated, is always more marked with *strong* emulsions, or when the bacteria are faintly stained; it ceases completely when the stain is strong enough to cause some agglutination, but agglutination is undesirable. Brownian movement can be avoided in properly stained emulsions by not having more than an average of about half a dozen bacteria per square; a much larger number, even if motionless, is difficult to count. The movement is more troublesome in counting chambers 0·1 mm. than 0·02 mm. deep.

Bacteria adhering to the under surface of the coverslip.—A certain proportion of the bacteria always adhere to the under surface of the coverslip and the number is increased by overstaining. In a series of over 100 observations made by the different observers it was found that the average number of staphylococci and colon bacilli adhering to the under surface of the coverslip was about 15 per cent. One point must be alluded to in the enumerating of bacilli like typhoid or colon—viz., they not infrequently stand at right angles to the coverslip or floor of the chamber, and consequently appear as round blue dots.

[1] Abstract of portion of a paper entitled "Observations upon the Standardisation of Bacterial Vaccines by the Wright, the Hæmocytometer, and the Plate Culture Methods," Journal of Pathology and Bacteriology, 1914, vol. xviii., pp. 379–400.

[2] Mallory and Homer Wright (1908): Pathological Technique, Saunders, fourth edition, p. 457.

[3] Murray, Leith: THE LANCET, March 14th, 1908, p. 790.

[4] Glynn, E. E., and Cox, G. L.: Journal of Pathology and Bacteriology, 1911, vol. xv., p. 300.

Standardisation in the ordinary hæmocytometer chamber 0·1 mm. deep.—The vaccines were standardised before sterilisation in case the heating for half an hour at 60° C. produced agglutination. The optically plane polished coverslip supplied with the apparatus is too thick for use with an oil-immersion, or even with most types of 1/6th inch dry lenses. Leith Murray in 1908 to remedy this defect suggested using a thin coverslip chosen from those supplied for ordinary microscopical work in the following manner. "A series of slips is cleaned and applied successively to the cleaned and dried plate-glass slip provided with the apparatus after breathing on the opposing face of each. Pressure is applied to make them adhere, and the slips which show Newton's rings well distributed over the surface are selected for use." This ingenious method, however, is not satisfactory if scientific accuracy is demanded. Many oil-immersion lenses depress such a coverslip and consequently diminish the depth of the counting chamber; thus a No. 2 coverslip of about 0·17 mm. is too thick for an ordinary 1/12th achromatic oil-immersion lens supplied by Leitz, Swift, or Beck with a free working distance of 0·17 mm., while even a No. 1 coverslip of about 0·12 mm. is too thick for an achromatic 1/12th supplied by Zeiss or Bausch and Lomb with a free working distance of 0·15 mm.

The pressure of the lens upon the coverslip can easily be demonstrated by the to-and-fro movement of the bacteria in the counting chamber which occurs with slight alteration in the fine adjustment. Even if the lens does not actually touch the coverslip, alterations in the fine adjustment may cause movement of the bacteria in the counting chamber from suction or adhesion between the two surfaces owing to the immersion oil. This suction effect may be very marked with thick oil and certain types of lens mount. It can easily be demonstrated in another way by taking an ordinary microscope slide, placing a drop of oil in the middle, and pressing the lens down gently till it almost touches the glass. If the lens is quickly raised the slide will be lifted with it. This suction action can be diminished if very thin immersion oil is employed.

Another point may be alluded to. Even if a thin coverslip of 0·15 mm. or less does give Newton's rings in some part when pressed down upon a moistened glass plate, it by no means follows that the surface is mathematically plane when a large portion forms the roof of a counting chamber. The elasticity or want of rigidity of such a coverslip, when in position over the filled chamber, may be easily appreciated by making a very gentle pressure upon its centre with the point of a pencil. This will cause the fluid to bulge over the edge of the chamber. No one would think of using an ordinary microscopical coverslip which is neither rigid nor optically plane for enumerating red blood corpuscles or leucocytes; why, then, should it be employed for the standardisation of bacterial vaccines when accuracy is of even more importance? Zeiss manufacture an optically plane cover-glass for counting chambers of 0·18 mm. thick, strengthened with a "cemented cylindrical glass cell." "The lower side of this cover-glass is polished accurately plane." This slip gives Newton's rings without difficulty. We have found, however, by actual experiment that it is too thick for all ordinary oil-immersion lenses when used with a hæmocytometer chamber 0·1 mm. deep. In order to understand the reason of this it is necessary to discuss the free working distance of an oil immersion lens.

Free working distance.—Zeiss[5] has defined the free working distance "as the distance between upper surface of a cover-glass 0·17 mm. thick and the lower surface of the lens mount, the lens being sharply focussed for an object situated immediately below the cover-glass." The free working distance of a Zeiss achromatic 1/12th oil immersion lens when oil is employed is stated to be 0·15 mm., thus the "actual distance" between the metal mount of the front lens and the object is 0·32 mm. Fig. 1 shows that a lens with a free working distance of 0·1 has an actual distance of 0·27. It is important to note, however, that these figures are approximate because the "metal mount of a front lens is necessarily subject to unavoidable slight variations" (Zeiss[6]). The free working distances of a 1/12th oil-immersion achromatic objective supplied by other makers are as follows: Ross, 0·15 mm.; Swift, 0·17 mm.; Watson, 0·17 mm.; Baker, 0·17 mm.; Leitz, 0·17 mm.; Reichert, 0·15 mm.; Bausch and Lomb, 0·15 mm.; Zeiss, 0·15 mm. The free working distance of many apochromatics is frequently much less than 0·15, but apart from their expensiveness they are hardly suitable for such work as the standardisation of vaccines owing to the greater care required in using them. Leitz manufacture a 1/12th oil-immersion fluorite objective 1·32 N.A., and Watson a 1/12th with a free distance of 0·12 and 0·09 mm. respectively.

These figures indicate at first sight that the free working distance of the ordinary 1/12th immersion lens likely to be used in the laboratories with the exception of the special lenses made by Leitz and Watson is theoretically never less than 0·15 mm. Unfortunately, we found by actual experience when working with coverslips of known thickness that the free working distance of many lenses is in reality very much less than stated in the catalogues. Thus a well-known firm tested one of their own new lenses with a reputed free working distance of 0·17 and found it only 0·10, while a lens by another maker stated to be 0·15 was only 0·08. The free

FIG. 1.

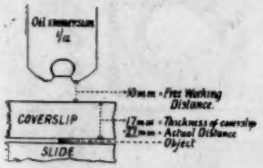


FIG. 2.

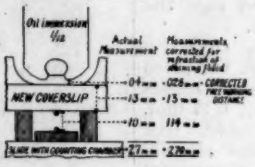
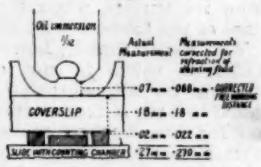


FIG. 3.



Diagrams illustrating free working distance of an oil-immersion lens and two types of hæmocytometer. Fig. 1. Illustrating free working distance. Fig. 2. Showing ordinary 1 mm. hæmocytometer chamber with new 0·13 mm. coverslip. Fig. 3. Showing new 0·02 mm. chamber with wide safety trench and 0·18 mm. coverslip, recommended by authors.

[5] Zeiss, 1908, Catalogue, thirty-third edition, p. 16.
[6] Ibid.

working distance of a lens partly depends upon the refractive index of the medium—air, water, or oil—between its under surface and the object examined. The greater the refractive index, the greater its free working distance. Thus, the free working distance of a 1/12th Zeiss oil-immersion lens is much *less* than 0·15 mm. if no oil is used, as the refractive index of oil is 1·515 but that of air only 1.

Professor Wilberforce kindly ascertained that the refractive index of the watery carbol-thionin solution we employ was exactly the same as that of water, and may be taken as 1·333; the refractive index of the immersion oil supplied by Zeiss is 1·515. The substitution of 0·1 mm. of water for 0·1 mm. of oil will diminish the free working distance of the oil-immersion lens according to the fraction $\frac{0{\cdot}1 \times 1{\cdot}515}{1{\cdot}333} = 0{\cdot}1136$—i.e., 0·1 mm. of carbol thionin is equivalent to 0·114 mm. of immersion oil—and the lens must be brought 0·014 mm. nearer the object than it otherwise would have been if the chamber contained oil instead of water (Fig. 2). After a large number of experiments we have found that cemented coverslips of 0·18 mm. and 0·15 mm. are too thick for a 0·1 mm. well, while those of 0·10 mm. are liable to warp after much use. Warping of the coverslips can easily be demonstrated by observing the images of the window frame reflected from its surface, when it will be noted that the lines of the frame are no longer straight.

We have found, however, that a coverslip 0·13 mm. thick is not only durable but also suitable for all achromatic oil-immersion lenses *stated* to have a free working distance of 0·17 mm. and for those by most makers stated to have a free working distance of 0·15 mm. The lens already alluded to with a reputed free working distance of 0·15 mm., but when actually tested of only 0·08 mm., could not be used with a 0·1 mm. chamber without causing movement of the bacteria floating in the fluid. As the lens mount could not touch the coverslip, being 0·006 mm. distant, the movement of the coverslip is explained by the immersion oil causing adhesion between it and the lens mount. In order to make full allowance for the over-estimation of the free working distance by some makers we have illustrated diagrammatically in Fig. 2 a lens with a free working distance of 0·1 mm. used with a hæmocytometer chamber 0·1 mm. deep. This lens has a corrected free working distance of 0·026, which is ample for ordinary purposes.

Messrs. Zeiss make such a coverslip, price 3s., which can be sterilised in formol or corrosive sublimate solution; but not with alcohol or xylol, for these substances dissolve the cement and cause warping. We have found these coverslips still optically plane after several months' use; they are easily repaired if the cement is damaged.[7]

Standardisation with a hæmocytometer chamber 0·02 mm. deep.—The easiest and best method of eliminating the defect of the small free working distance of an oil-immersion lens is to diminish the depth of the counting chamber instead of diminishing the thickness of the coverslip. After experimenting with specially made counting chambers of various depths we have come to the conclusion that a 0·02 mm. chamber with an optically plane cemented coverslip 0·18 mm. thick as catalogued by Zeiss is the best, and suitable for all practical purposes. This apparatus can be used with all achromatic oil-immersion lenses, even with one by Watson N.A. 1·30, having a free working distance of 0·09 mm.

Fig. 3 shows that a lens with a free working distance of 0·1 mm. used with such a counting chamber and coverslip has the corrected free working distance of 0·068 mm., which is ample. The only disadvantage of the 0·02 counting chamber was the difficulty of spreading the drop, especially if the glass is slightly greasy. We have completely remedied this defect by increasing the width of the trench from the usual 0·15 mm. to 2·5 mm., for this provided a larger cistern for the overflow of surplus when the drop is a little too big. (See Fig. 4.) If, however, the surplus of fluid is so great that it comes in contact with the opposite wall of the trench, then, as is well known, it spreads by capillary attraction everywhere under the coverslip, Newton's rings disappear, and the depth of the chamber is increased.[8]

FIG. 4.

1 and 1A.—Ordinary 1 mm. hæmocytometer chamber with new 0·13 coverslip suitable for all immersion lenses with a F.W.D. of 0·17 mm. and some of 0·15 mm. 2 and 2A—New 0·02 mm. chamber with wide safety trench and coverslip 0·18 mm. thick, suitable for all immersion lenses with a F.W.D. from 0·17 mm. to 0·09 mm. (*Note.*—Too large a drop of methylene blue has been placed in 0·02 chamber and the excess is bulging over into the trench, but owing to its extra width the fluid has not touched the opposite wall, and so run under the coverslip by capillary attraction, and increase the depth of chamber.)

Calculation with a 0·02 mm. chamber, the number of bacteria per square is multiplied by 20,000 instead of 4000. Bodley Scott[9] has recently recommended a counting chamber 0·01 mm. deep and an optically plane coverslip, though he does not state how such a coverslip is obtained. The disadvantage of such a counting chamber ten times shallower than the ordinary Thoma-Zeiss and twice as shallow as the Helber are two: (1) The greater the difficulty in spreading the drop accurately; and (2) any error in the depth of the

[7] Zeiss now make a 3·5 mm. achromatic oil-immersion lens with a free working distance large enough to take a 0·1 mm. chamber with a coverslip 0·18 mm. thick.

[8] This apparatus will be catalogued by Zeiss under the name of the Helber-Glynn chamber, price 15s.

[9] Scott, T. Bodley, and Scott, G. Bodley: THE LANCET, Sept. 28th, 1912, p. 879.

chamber or in the correct adjustment of the coverslip is more serious.

Settling of the bacteria in the counting chamber.—One slight disadvantage of the chamber method is the difficulty of counting the bacteria when first introduced owing to their movement. After a few minutes, however, the great majority settle at the bottom of the chamber and remain motionless, though some may continue in Brownian movement indefinitely. Obviously the settling will take longer in a 0·1 mm. than in a 0·02 mm. chamber. A large number of observations made upon the different strains of colon bacillus and staphylococcus indicated that whereas in a 0·02 mm. chamber the great majority of the bacteria had settled in 15 minutes, in a 0·1 mm. chamber a considerable number were still moving after half an hour. A further series of observations showed that quite accurate accounts could be made with a 0·1 mm. chamber after the contents had settled for 15 minutes, provided that great care is taken to hunt for floating organisms. Hunting for the floating bacteria takes a considerable time if many are present, far longer than in a 0·02 mm. chamber. Another advantage of the 0·02 mm. chamber is the greater facility with which the bacteria adhering to the under surface of the coverslip may be counted. First, because only a slight turn of the fine adjustment is necessary to focus them; and second, because the outlines of the squares are still seen when the bacteria are focussed, and consequently there is no difficulty in ascertaining to which squares they belong.

Summary of the advantages of the 0·02 mm. chamber.—Obviously it is more economical to standardise vaccines in the ordinary hæmocytometer counting chamber 0·1 mm. deep, but the 0·02 mm. chamber is preferable for the following reasons: (1) The apparatus is suitable for all achromatic oil-immersion lenses, even if the free working distance is as low as 0·09; (2) the coverslip being 0·18 mm. thick is more durable; (3) almost all the bacteria settle at the bottom of the chamber in 15 minutes when accurate counts can be made, whereas in the 0·1 chamber a considerable number are still moving after half an hour; (4) bacteria adhering to the under surface of the coverslip and any still floating in the chamber are much more easily enumerated; (5) the optical definition of the bacteria is better owing to the smaller quantity of fluid; and (6) the difficulty of accurately adjusting the drop of emulsion in such a shallow chamber has been entirely removed by widening the safety trench for holding surplus fluid to 2·5 mm.

The relative accuracy of the Wright and counting chamber methods for standardising vaccines.—It is now 12 years since Wright[10] introduced his simple and ingenious method of standardising vaccines. Though the method has been of great service to vaccine therapy we are convinced it suffers from two serious defects, first, it is usually very inaccurate, and second, it usually seriously underestimates the strength of the bacterial emulsion. In order to ascertain whether the Wright or the chamber method gives the more accurate results, two observers independently standardised bacterial emulsions by each method, and the *percentage deviation from the arithmetic mean* of their counts was taken as a measure of the error in the method. This is a more practical test of the accuracy than that obtained by two observers enumerating the bacteria in the same series of squares or microscopical fields. Forty-four bacterial emulsions made from different strains of colon bacillus, staphylococcus and streptococcus were tested in duplicate in this manner. We found that the average error was less than 5 per cent., with a minimum of 0·5 per cent. and a maximum of 21 per cent. for the chamber method, and more than 15 per cent., with a minimum of 1·1 per cent. and a maximum of 54 per cent. for Wright's.

The error with a 0·1 mm. chamber, though a little more than with a 0·02 mm., is also much less than in Wright's method. In six bacterial emulsions of colon bacillus and staphylococcus standardised in a 0·02 mm. and 0·1 mm. chambers and by Wright's method the average error was 3·1 per cent., 5·4 per cent., and 34·1 per cent. respectively. The average time occupied in counting these emulsions in the 0·02 mm. chamber (64 squares) was 8 minutes, in the 0·1 mm. chamber (64 squares) 10 minutes, with Wright's method (50 fields) 12½ minutes. This further demonstrates the superiority of the hæmocytometer method, especially the 0·02 mm. chamber.

Wright's method usually underestimates the strength of the bacterial emulsions.—This serious defect has been attributed to various causes. In our opinion the chief are, first, a large number of isolated bacteria are usually left behind at the beginning of the smear, as we have shown elsewhere; second, small groups of bacteria mixed with blood platelets and leucocytes are drawn to the end of the film, where they are usually unnoticed unless specially looked for with a low power. In both cases these bacteria almost certainly escape enumeration. It is no use trying to remedy this defect of unequal distribution of the bacteria and red cells by counting indiscriminately fields selected from all parts of the smear.

A series of emulsions were standardised by the 0·02 mm. chamber and Wright's method. We found that the average percentage increase in 15 staphylococcus emulsions standardised by the 0·02 mm. chamber over Wright's method was 76 per cent., with a maximum of 192 per cent.; and in 12 emulsions of colon bacillus the average increase was 72 per cent., with a maximum of 228 per cent. Additional figures are given elsewhere. Rarely the chamber method gave a lower count than Wright's. This is only to be expected on account of the unequal distribution of bacteria and red cells.

Summary and Conclusions.

1. The most scientific method of enumerating the bacteria for vaccines is in some form of hæmocytometer chamber.

2. An optically plane and rigid coverslip must be used with such apparatus, for it is recognised as essential when counting blood and is still more essential when counting bacteria, where accuracy is of greater importance. Owing to the small free working distance of oil-immersion lenses most optically plane coverslips are too thick.

3. Two types of hæmocytometer chamber may be employed: (*a*) The ordinary chamber 0·1 mm. deep, with an optically plane coverslip 0·13 mm. thick. This is suitable for all oil-immersion lenses with a free working distance of 0·17 mm. and some of 0·15 mm. (*b*) A chamber 0·02 mm. deep, with a special safety trench 2·5 mm. wide and optically plane coverslip 0·18 mm. thick. This is suitable for all achromatic oil-immersion lenses, even if the free working distance is as low as 0·09.

4. The 0·02 mm. chamber is much superior for the following reasons: (*a*) Almost all the bacteria

[10] Wright: THE LANCET, July 5th, 1902, p. 11.

settle at the bottom in 15 minutes, when accurate counts can be made, whereas in the 0·1 mm. chamber a considerable number are still moving after half an hour. (*b*) Bacteria adhering to the under surface of the coverslip or still floating in the chamber are more easily enumerated. (*c*) The optical definition of the bacteria is better owing to the smaller quantity of fluid. (*d*) The free working distance is greater, and the coverslip being 0·18 mm. thick is more durable. (*e*) Counting is quicker owing to the much smaller number of moving bacteria and the greater ease in focussing the top and bottom of the chamber.

5. A weak solution of carbol thionin is the best diluting and staining fluid; unlike a weak solution of Giemsa it is quite free from precipitate and stains more intensely.

6. Enumeration of stained bacteria in a hæmocytometer chamber, particularly in one of 0·02 mm. deep, is more rapid and much more accurate than by Wright's method.

7. The hæmocytometer method does not underestimate the strength of the bacterial emulsion as usually happens with Wright's method, sometimes to a very serious extent.

8. This research has been undertaken because we believe it is the duty of the bacteriologist to standardise and dispense his vaccines with the same accuracy and care as that exercised by the pharmacist in standardising and dispensing his drugs. 'Scientific vaccine therapy will be advanced by scientific exactness.

A METHOD OF INCREASING THE ACCURACY AND DELICACY OF THE WASSERMANN REACTION.

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WE bring forward in the following article our system for performing the Wassermann reaction in detail and discuss the various objections that might be raised to our methods of increasing its accuracy and delicacy. We strongly urge that in performing the Wassermann reaction the substance used as "antigen" should be purely "antigenic" and freed from complicating anticomplementary and hæmolytic factors.

The Antigen.

An ox heart is trimmed free from fat, &c., finely minced, allowed to stand at room temperature for 24–36 hours, dried in a current of warm air in about four hours, and finally completely dried in an evacuated desiccator over sulphuric acid. It is then finely powdered and extracted with 3–4 volumes of absolute alcohol at 37° C. for three days, then the extract is filtered off and fresh alcohol added, and the extraction continued for another three to four days. The united extracts are evaporated *in vacuo* at 56° C. in a distilling apparatus. (The evaporation *in vacuo* is very rapid, so that a Winchester quart is evaporated in about two hours.) The residue is then extracted with 0·730 ether. The ethereal extract is next precipitated with acetone, the precipitate collected, washed with acetone, redissolved in ether and reprecipitated with acetone. This precipitation and re-solution is continued till the precipitate and solution are quite white. The precipitate is collected, washed with acetone, pressed on filter paper, and is ready for use.

It will be seen that the precipitate contains two phosphatid fractions—viz., the free and bound N_1P_1 fractions. The N_1P_2 fraction is not extracted to any appreciable degree; the N_2P_1 fraction is not taken up in the ethereal extract of the alcohol residue. There may be a little jecorin of Drechsel, but very little. After saponification of a large quantity of this "purified" antigen we have been unable to demonstrate even traces of cholesterin. By the "ninhydrin test" our antigen always gives a marked α-amino-acid reaction. It appears probable to us, from work that is in progress, that the antigenic property of a phosphatid may depend upon the presence of protein degradation bodies in combination with the phosphatid. For example, the Cuorin fraction N_1P_2 of a perfectly fresh tissue does not give the ninhydrin reaction and does not act as an antigen, whereas the same fraction extracted from a suitably autolysed tissue gives both the ninhydrin reaction and acts as a good antigen.

Three grammes of the purified phosphatid are dissolved in the least possible quantity of ether and then made up to 100 c.c. with absolute methyl alcohol (Merk) and stored in a well-stopped, brown-tinted glass bottle at laboratory temperature. This stock solution, if kept free from moisture, will keep its titre absolutely constant for over one year. The slight deposit that may occur after it is first made up does not appreciably alter the titre, and need not be removed. For the purpose of the test 1 c.c. of this solution is poured on to 9 c.c. of normal saline and the whole rapidly shaken to make the emulsion.

The emulsion is then standardised with regard to its hæmolytic, anticomplementary, and antigenic properties as described subsequently. If the phosphatid shows *any* hæmolytic or anticomplementary properties in 500 c.mm. of the saline emulsion we consider it to be unsuitable for the Wassermann reaction, and continue the process of purification until these properties are removed. The antigenic value should be in 2 or 1 c.mm. of the saline emulsion (= 3 millionths of a gramme of the original phosphatid), which strength can be readily obtained. The stock solution should be standardised once a month.

Standardisation of an "Antigen."

For this, three factors have to be taken into consideration as was first pointed out by Noguchi: (1) hæmolytic; (2) anticomplementary; and (3) antigenic.

1. *Hæmolytic factor.*—To each of a series of five tubes containing 1 c.c. of normal saline 100 c.mm. of 10 per cent. red cell suspension are added and then 500, 400, 300, 200, 100 c.mm. of the antigenic emulsion respectively. The tubes are shaken and placed in the water-bath[1] at 38° C. for three hours, at the end of which time the presence of hæmolysis is noted.

2. *Anticomplementary factor.*—To each of a series of 9 tubes containing 1 c.c. of normal saline 1½ units of complement are added, and then 500, 400, 300, 200, 100, 80, 60, 40, 20 c.mm. of the antigenic emulsion respectively. The contents of the tubes are mixed and incubated for one hour in the water bath at 38° C. At the end of this time 1½ units of amboceptor and 100 c.mm. of 10 per cent. red cells are added. The contents are remixed and the tubes returned to the water bath for half an

[1] A convenient bath (thermostat) with racks can be obtained from Messrs. Baird and Tatlock.

hour and the reading is taken, doubtful tubes being centrifugalised.

Before determining the anticomplementary power of a substance it is important that the re-agents used be accurately standardised. The usual method of estimating the anticomplementary power of a substance by exposing it to two units of complement we consider to be very inaccurate, for before any interference with hæmolysis can be observed one whole unit of complement will have to be absorbed. Thus small but, as we have shown, important anti-complementary phenomena are continually not observed by workers who use the usual method.

3. *Antigenic factor.*—To each of a series of 10 tubes containing 1 c.c. of normal saline, 2 units of complement and 100 c.mm. of inactivated syphilitic serum are added, then graduated quantities of the antigenic emulsion, thus: 100, 80, 60, 40, 20 c.mm., and 100, 80, 60, 40, 20 c.mm. of 1 in 10. The tubes after mixing are placed in the water-bath at 38° C. for one hour, and at the end of this time 2 units of amboceptor and 100 c.mm. of 10 per cent. red cells are added and the tubes incubated for a further half hour. Readings are then taken, doubtful tubes being centrifugalised. The value of the antigen is expressed in the least quantity of the antigenic emulsion which will completely inhibit the hæmolytic action of 2 units of complement.

Standardisation of Amboceptor and Complement.

Amboceptor, antisheep[2] or antihuman, may be obtained in the usual way from rabbits; a convenient stock dilution may be kept in the ice-chest for three months. Complement may be obtained by decapitation of a guinea-pig (not pregnant), the blood being collected in a Petri dish to clot and separate for 24 hours in the ice-chest. (No vivisection licence is required for humanely killing an animal.)

The serum obtained in this way will have a constant titre provided that the animal has been kept in a cage with an excess of oats and green food always present. The clear serum is diluted half and half with normal saline.

The red cells, either sheep or human, are washed three times in the centrifuge with 0·9 per cent. saline. On the last washing the centrifugalisation is continued until the volume of the deposited red cells is constant. A 10 per cent. emulsion of corpuscles is made by adding 1 c.c. of this deposit to 9 c.c. of saline. Before proceeding with the actual Wassermann reaction an estimation of the amboceptor and complement should *always* be performed. The usual method is to estimate each separately. This wastes much time. If the approximate titre of each is known a simultaneous estimation of the two may be made. (Table I.)

Table II. gives a scheme for the Wassermann reaction in which every factor is absolutely controlled. Further, we would draw attention to the increased delicacy of the reaction by using large quantities of the serum, 500 c.mm. (cerebro-spinal fluid 1000 c.mm.). These large quantities can only be employed with accuracy when a non-anticomplementary antigen is used since the serum is nearly always anticomplementary in these quantities.

TABLE I.—*Simultaneous Estimation of Amboceptor and Complement.*

a Approximate titre of amboceptor, 70 c.mm.—30 c.mm. of 1 in 1000.
b Approximate titre of complement, 50 c.mm.—30 c.mm. of 50 per cent.
Series of 12 tubes containing 1 c.c. of normal saline.

Tube No.	Amboceptor (1 in 1000).	Complement 50%.	Red cell suspension 10%.	Result after ½ hour in water-bath at 38° C.
1	70 c.mm.	50 c.mm.	100 c.mm.	Complete hæmolysis.
2	,,	40 ,,	,,	,, ,,
3	,,	30 ,,	,,	,, ,,
4	,,	20 ,,	,,	Marked hæmolysis.
5	50 c.mm.	50	,,	Complete hæmolysis.
6	,,	40 ,,	,,	,, ,,
7	,,	30 ,,	,,	Marked hæmolysis.
8	,,	20 ,,	,,	Slight hæmolysis.
9	30 c.mm.	50 ,,	,,	Very marked hæmolysis.
10	,,	40 ,,	,,	Slight hæmolysis.
11	,,	30 ,,	,,	,, ,,
12	,,	20 ,,	,,	,, ,,

In the above table the unit of each is contained in tube 6.

[2] Sheep hæmolytic serum may also be obtained from Messrs. Meister Lucius and Brüning.

TABLE II.—*A Wassermann Reaction.*

Test (front row).					Control (back row).				
Tube No.	Normal saline.	Antigen emulsion 1 in 10.	Complement units.	Serum inactivated 56°C. ½ hour.	Tube No.	Normal saline.	Antigen.	Complement units.	Serum inactivated.
	c.c.	c.mm.		c.mm.		c.c.			c.mm.
1	1	100	1½	100 A*	1	1	*Nil.*	1½	100 A*
2	1	100	1½	500 A*	2	1	*Nil.*	1½	500 A*
3	1	100	1½	100 B*	3	1	*Nil.*	1½	100 B*
4	1	100	1½	500 B*	4	1	*Nil.*	1½	500 B*
And so on for other sera.									
				Further Controls.					
10	1	100	1½	*Nil*	10	1	*Nil.*	1½	*Nil.*
11	1	100	1½	100 normal.	11	1	*Nil.*	1½	100 normal.
12	1	100	1½	100 syphilitic.	12	1	*Nil.*	1½	100 syphilitic.

* A, B, &c., sera to be tested.

Mixed, incubated 1 hour at 38° C. in water-bath. Then 2 units of amboceptor and 100 c.mm. of 10 per cent. red cell suspension added to each tube. Remix, return to water-bath for half an hour, read.

In using large quantities of serum (0·5 c.c.) it might be urged that: (1) such quantities would alone interfere with complement and so render a reading impossible or dubious; (2) zone phenomena might arise—that is to say, that with larger quantities a less powerful fixation would occur; and (3) since it is said that between normal and syphilitic sera there is no qualitative difference, but only a quantitative one with regard to the Wassermann reaction, fixation might possibly occur with large quantities of normal serum.

Now dealing with (1), there is no possibility of error arising from this source in perfectly controlled systems, using a non-anticomplementary antigen. Here with an anticomplementary serum the same degree of inhibition of hæmolysis occurs in the test and control tubes, whereas if the serum is also syphilitic the test tube shows more inhibition than the control, thus rendering the reading obvious and free from fallacy.

(2) Browning and McKenzie demonstrate that with their antigen larger quantities of serum may fix less complement than smaller ones. Using our antigen, however, we have never been able to obtain this result, but have always got more fixation with the larger quantities of serum than with the smaller. Though we have carefully experimentally endeavoured to provoke zone phenomena

in this way we have never been able to obtain them.

(3) Using even still larger quantities (1 c.c.) of normal sera and our purified antigen, we have never been able to demonstrate any true fixation. Thus, using a carefully controlled system, with a non-anticomplementary antigen, these large quantities of serum may be used with advantage without fear of error, especially as a smaller quantity—viz., 100 c.mm.—is simultaneously tested.

Any organ can be used for the purpose of extracting a good antigen, provided that the degree of autolysis which the organ has been allowed to undergo is the suitable one for that organ. It has been stated that the antigenic value of a phosphatid depends upon the tissue from which the phosphatid has been extracted. The observation that one organ has been found to give a better antigen than another is of no value, if the question of the degree of autolysis has not been considered. It must be remembered that different organs autolyse at different rates. Autolysis not only increases the antigenic value of the extract, but also the hæmolytic and anticomplementary properties. This fact has prevented other observers from obtaining a suitable antigen by this process; we have shown that purification of the phosphatid removes these complicating hæmolytic and anticomplementary factors.

The increased antigenic value of a phosphatid, extracted from a suitably autolysed tissue, is not due to the phosphatid forming an additive combination with cholesterin.

1. It is perfectly true that autolysis increases the amount of cholesterin, but this increase in the short time during which the tissue has been allowed to undergo autolysis (24–36 hours) at the room temperature is very slight.

2. We have experimentally demonstrated that our purified phosphatid does not contain cholesterin.

3. And that a phosphatid extracted from a fresh organ in the presence of a saturated alcoholic suspension of cholesterin does not possess antigenic properties.(*1)

With regard to extracts from congenital syphilitic organs, we have found that the antigenic value has no connexion with the spirochæte content, but depends upon the degree of autolysis of the organ.(*2) The antigenic properties of extracts of these organs are in no way superior to extracts from autolysed normal organs. These antigens are suitable for use, providing that their marked hæmolytic and anticomplementary properties are removed by purification.

All experiments relating to "the remarkable action of cholesterin in increasing the action of lecithin as *antigen*" (*3) are open to the criticism that an accurate quantitative analysis has never been performed. We have constructed an experiment (*4) exactly reproducing experiments of Browning and McKenzie (*5), and have shown that cholesterin produces identically the same effect whether added to a syphilitic serum and antigen mixture or to a non-syphilitic serum, which by itself would cause the same amount of complement inhibition as the syphilitic serum with lecithin antigen alone. That is to say, that the action of cholesterin is not specific to syphilis, but enhances anticomplementary properties whether pre-existing or brought about by a syphilitic serum and antigen mixture, and thus cholesterin may occasionally cause a normal serum to be diagnosed as positive. Thus our statement that "the use of cholesterin ..... is not only unnecessary but introduces a serious source of error" (*2) is not based on theoretical considerations, but on experimental work where the subject has been fully considered (*1).

Finally, "certain methods are admitted to yield too high a percentage of positives, and these to any logical mind must be completely disregarded so far as their employment for diagnostic purposes is concerned; it is obvious that any form of the test which is liable to return positive reactions in cases which are not syphilitic is useless for diagnosis, however valuable such a method may be as an indication for the continuance of treatment in known cases of syphilis" (*3). There has recently appeared an article (*6) by McIlroy and Watson, who examined by the method of Browning, Cruickshank, and McKenzie 100 cases of women mainly from the obstetrical out-patient department "not selected from the point of view of the Wassermann test."

The cases were from the respectable working-class; obvious cases of syphilis were not included. They found—

Positive to the reaction	43
Doubtful	9
Negative	48

Of these 48 negatives, 7 had children which gave a positive, thus making more than half of the population of the respectable working-class syphilitic. That these results are suspiciously high must be self-evident, and they make an impartial observer suspicious of a method that gives so many positive results.

In conclusion, the method of performing the Wassermann reaction that we bring forward in this paper is exceedingly simple, quick, and absolutely controlled. It will be noticed that no vivisection licence is required, a matter of considerable importance in many laboratories. The antigen has been used now in several thousands of cases and has consistently given excellent results.

References.—(*1) Thiele and Embleton: Zeitschrift für Immunitätsforschung, Band xvi., Heft 4, 1913. (*2) Thiele and Embleton: THE LANCET, Feb. 21st, 1914, p. 526. (*3) Browning: THE LANCET, March 14th, 1914, p. 740. (*4) Thiele and Embleton: Zeitschrift für Immunitätsforschung, Band xvi., Heft 4, 1913, Tables II., IV., and XI. (*5) Browning and McKenzie: Recent Methods in the Diagnosis and Treatment of Syphilis, London, 1911. (*6) Significance of the Wassermann Reaction in Gynæcological Diagnosis, McIlroy, Watson and McIlroy, British Medical Association, Brighton, 1913, Gynæcological Section.

NOTES ON DIABETIC RETINITIS.

BY SAMUEL WEST, M.D. OXON., F.R.C.P. LOND.,
CONSULTING PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

THERE is much difference of opinion on the subject of diabetic retinitis. Some maintain that there is no such a thing; others that the retinitis which occurs is albuminuric and due to the association of diabetes with granular kidney; while others hold that there is a form which is perfectly characteristic and pathognomonic.

I have seen many cases of retinitis in diabetes, and I may say at once that I have failed to observe anything whatever characteristic in it—that is to say, nothing by which from the change in the retina diabetes could be diagnosed as granular kidney can. I have had cases shown me more than once which were said to be typical, but they did not convince me, and so far as my own experience goes I should say that it was impossible to diagnose diabetes from anything that can be seen in the retina.

I agree, too, with the statement that many cases of so-called diabetic retinitis are typically albuminuric, and are due to the association of diabetes with granular kidney, an association which is by no means rare. But this does not exhaust the subject.

There are two forms of albuminuric retinitis, which I have called the degenerative and the exsudative respectively.

The degenerative form is the familiar and well-recognised type characterised by the white glistening patches of degeneration of varying sizes, and grouped especially round about the yellow spot, but whether large or small equally characteristic and quite pathognomonic, for they occur with no other disease.

In the exsudative form there is exsudation involving the disc and extending from the disc outwards in any direction; the patches of exsudation may be of larger or smaller size, but if small never present the bright glistening appearance characteristic of the other form, but are of a dull yellowish colour, and a woolly or fluffy character, with no sharply defined margins. There is nothing in this form to distinguish it from the neuro-retinitis of other affections—e.g., that which occurs with cerebral tumour. This form may occur in acute nephritis as well as chronic. It may disappear entirely as the nephritis recovers, while the degenerative patches are persistent and practically never disappear, probably because the renal lesions are permanent.

The exsudative form is in all cases, I believe, of toxic origin, and might therefore arise in the course of diabetes, just as it does in the course of acute nephritis, and this, in my opinion, is the fact, for I have certainly seen cases of this kind in which there was no evidence of granular kidney.

The view I am expressing would reconcile and explain the different opinions held. The degenerative form would be characteristic of granular kidney, whether associated with diabetes or not. The exsudative form would be of toxic origin and indistinguishable from that which is seen in other toxic states, and be due to some poison produced in diabetes which attacks the optic nerve and retina just as it sometimes does the peripheral nerves. What the poison is we know no more in diabetes than we do in nephritis.

Wimpole-street, W.

THE THERAPEUTIC VALUE OF THE POTATO.

BY HEATON C. HOWARD, L.R.C.P. LOND., M.R.C.S. ENG.

IN considering generally the results of the treatment I am about to describe, there are two facts which stand out most prominently, and which emphasise in a marked degree the peculiar properties of the raw potato juice. The first is the prompt relief from pain, acute or subacute, which is shown to have occurred, and the second is the rapid absorption of the fluid in cases of synovitis. These results, so unexpected when the investigation was commenced, have been so constant and so thoroughly tested in the many cases under my care that I now feel justified in bringing them before the medical profession hoping that the treatment, if carried out as recommended, will meet with similar success at the hands of other practitioners.

My investigations of the therapeutic uses of the potato, though carried on for some years, are not yet completed. The initial difficulty of ascertaining the kind of complaint the potato would relieve and of deciding upon the part of the plant to be used and then of the method of making the preparation will be appreciated.

Preparations.—It seems on investigation of the juice of the potato that there is no alkaloid in it and that the chief ingredient is potash salts, which are present in large quantity. The basis of all the preparations is the liquid extract; "extractum solani liquidum" is the name given to it. It is made as follows:—The raw potatoes are put into a hydraulic press and the liquid is squeezed out. About half the weight of the potato comes away as juice. The starch and the nitrogenous matter are removed, leaving the juice with the salts only in it. It is then concentrated down by heat and some glycerine added in order to preserve it, until it is made five times the strength of the juice, therefore ten times the strength of the potato itself. The ointment is made the same strength as the extract, and is prepared chiefly with lard. A liniment is made by taking equal parts of the extract and lin. saponis co., or 2 of extract and 1 of soap liniment. The plaster is made as ordinary plaster and is of the strength 10 to 1. The ampullæ contain the pure extract, which is five times the strength of the juice and properly sterilised. I have as yet not had much experience in the hypodermic use of the remedy. All these preparations are made by Messrs. Baiss Brothers and Stevenson, of Grange-road, Bermondsey, and are sold at a moderate price.

Pain.—In the following notes for purposes of description pain is divided into two large sections, active and passive, thus:—

PAIN.

Active.	*Passive.*
Severe.	Severe.
Moderate.	Moderate.
Slight.	Slight.

Active pain is felt when the body is quite still, as in acute gout of the toe, neuralgia, pain after injury, headache, &c., and the exact character can be further described by prefixing adjectives such as tearing, gnawing, stabbing, shooting, &c.

Passive pain is that felt on movement of a part or limb, as in rheumatism and gouty joints after the active pain has gone, also in subacute rheumatism, fibrositis, &c. Other further descriptive adjectives can be added.

Synovitis.

The action of the liquid extract on acute synovitis (with effusion) of the knee-joint, whether traumatic or gouty, is speedily to relieve the pain, which does not recur, and to cause absorption of the fluid in four, five, or six days. After the fluid has disappeared the slightly thickened synovial membrane can usually be felt for a day or two. One or two days' application of the ointment will remove it. At the end of a week the patient can get up, using the knee as little as possible. The knee should have a flannel bandage put on, and in about 14 or 16 days from commencement of treatment the patient will be able to resume his work. If he gets about too soon the fluid is liable to return. This mode of treatment is simple, speedy in its result, and appears trustworthy in its action.

Mode of application in acute cases.—It is applied as a fomentation or poultice, one part of extract to three or four parts of hot water on three or four layers of lint, covered with protective, then cotton-wool and a bandage, to be renewed every two, three, or four hours, according to the severity of the case, until the fluid is absorbed. No splint is required, but the patient must be kept in bed with the knee in a comfortable position.

Cases.

Owing to limited space one typical case is given, with outlines of a few of many cases I have treated.

CASE 1.—On June 23rd the patient was shaken in a train and got his right knee twisted. Went to work the next day, but had to come back. Knee swelled up the same evening. On the 25th the right knee-joint was very much swollen and felt full of fluid. Size 15¾ in. Ext. solani 1 to 4 applied hot every three hours. On the night of the 26th the pain kept the patient awake, but on the 27th was much easier; little fluid to be felt. Size 14⅛ in. 29th: No fluid perceptible. Passive pain on standing. Size 14¼ in. Strapped with emplast. solani. July 1st: Knee same size as the other; little pain on movement. Emplast. solani. 6th: A little pain at the head of the tibia—evidently the result of the original injury. The patient went to work. Fluid absorbed in four days.

CASE 2.—The patient hurt her knee late one evening, and when seen the next morning presented the usual signs of fluid in the joint. Ext. solani 1 to 5 was applied every two hours at first, and then less frequently, and on the fourth day the fluid was almost gone, and on the sixth day the patient called on me and I found the fluid had disappeared. She did not come again.

CASE 3.—A patient who was subject to attacks of synovitis. The present attack was treated with raw potato juice made hot, and the fluid disappeared in five days.

CASE 4.—The patient, aged 53, had been receiving hospital treatment for nearly four weeks as an out-patient for synovitis of left knee caused by an accident. There had not, he said, been much improvement, and the pain had been active up to three days previously, but was now passive. On examination the fluid was easily felt. Ext. solani 1 to 4 was applied. After ten days of treatment the fluid was gone and the patient resumed work a few days later. He began to use his leg too soon and thus delayed his recovery.

CASE 5.—A case of subacute synovitis, and the treatment was carried out whilst *the man was at work*. The ext. solani was applied undiluted and kept on all day with a bandage. In four days the circumference of the knee was diminished by almost ¾ in., and in two weeks afterwards the fluid had gone, leaving a little thickening of the synovial membrane, which remained for some time but afterwards completely disappeared.

CASE 6.—Another case of acute synovitis, and although the treatment was not quite properly carried out, the complaint was cured, and the patient resumed work in 17 days.

CASE 7.—This case was treated in St. George's Hospital by Mr. Ivor Back, who has kindly allowed me to use these notes. The patient had a swelling of the knee for nearly five weeks before admission, and then he was found to be suffering from synovitis. Fomentations of ext. solani 1 to 4 were used three-hourly during the day for seven days; on the tenth day the knee was normal in size and the patient was discharged the next day.

It will be noticed that some of these cases were acute, and the treatment commenced very soon after the injury was received. In these the fluid disappeared within a week. In the other cases, where treatment was not commenced until two or three weeks after the accident, it took a little longer for the fluid to disappear. Hence the sooner treatment can be commenced after the original injury, the sooner the case will be cured.

Case 5 shows the benefit of emplast. solani in cases in which the synovial membrane remains thickened for some reason or other. It seems much superior to Scott's dressing.

Gout.

I do not claim in the treatment of acute gout by the juice of the potato that it is a cure of the constitutional symptoms; I only claim that the local treatment relieves the pain more quickly than any other treatment at present used, either external or internal.

Mode of application.—One part of extract to three or four parts of hot water applied as for synovitis every three or four hours until the pain and swelling are relieved.

Cases.

For the reason given under synovitis one typical case is given and outlines of a few others.

CASE 1.—The patient was 55 years of age. On Feb. 3rd at 7 A.M. pain came on in the left great toe-joint and spread across the foot to the ankle. On the 4th the joint was exceedingly tender and painful, and was red and shiny. The ankle also was red and a little swollen. No ext. solani was available, so lead and opium lotion was applied. The patient had not much sleep that night, and the joints were about the same on the 5th. Commenced applying ext. solani (1 to 5, hot, every 3 hours) at 11 A.M. on this day. On the 6th I gathered that the pain had been very bad at times, shooting and plunging through the toe-joint with a general gnawing in the ankle. The pain in the toe-joint had eased at 6 P.M., but persisted in the ankle, though it was easier. Shooting pain had come on again at 8.30 P.M. and had kept on until 1.15 A.M., when it eased down. The patient had slept until 2 A.M., when he awoke for a few minutes and then slept again until 7.30 A.M. Now (1 P.M.) there was no active pain in the toe, but a little in the ankle. The ankle-joint was now movable, with little gnawing pain. The toe-joint moved normally and the redness had gone. There was no tenderness and the patient seemed practically well. (No medicine given.) 7th: No return of the pain. The patient had passed a good night. Lotion applied as before. 8th: The patient had slept all night. There was a little swelling round the ankle, but the pain had almost gone. Toe normal. 9th: Further improvement. 10th: Swelling almost gone. No redness. 14th: The patient came to see me. There was no pain or swelling, only aching on walking. 22nd: Emplast. solani applied to instep for the last two days. The aching in foot gone. Active pain relieved in seven hours.

CASE 2.—An acute attack in a woman's great toe-joint. Although she had been ill for some days the active pain was relieved within 12 hours with the three-hourly fomentation of ext. solani 1 to 5, and she could walk in four days.

CASE 3.—A man, aged 67, with an attack in the wrist, hand, and fingers. This is often met with in people getting on in years. The raw juice made hot was here applied every three hours and the active pain was relieved in two hours. The attack had lasted three days before treatment. The hand got well in a few days.

CASE 4.—A gouty subject. Left knee attacked, followed by right wrist and left hand. Had to wait a few days for the extract, and the active pain was relieved after the second application. The extract relieved all the joints, and the patient thought that, considering the double attack, he had got over it very well.

CASE 5.—This man had both toe-joints attacked whilst suffering from delirium tremens. It was not a case in which a good result could be expected, but the active pain was relieved in 12 hours in one joint and in a few hours in the other.

CASE 6.—The patient was a woman who had the usual attack in the great toe, and had been under ordinary treatment by my locum tenens for five days, but was no better. On using the extract the active pain was relieved in three hours, and the toe got well in about three days. The patient had another attack a month afterwards. She sent for the lotion and got well without my seeing her. Probably alcoholic.

CASE 7.—A man, aged 58, with a large amount of fluid in the knee-joint accompanied by an attack in the wrist. The

fluid was rapidly reduced and it disappeared in about eight days, the wrist also getting well in a few days, and the active pain being relieved on the first day.

In considering these cases I would draw attention to the rapidity with which pain is reduced from active to passive, very often after the first application. The swelling disappears in a few days. I refer, of course, to the swelling produced by the acute attack. The swelling that remains after the violence of the attack has passed, and which may be called subacute or chronic, does not yield so quickly to the potato juice, and will probably require other treatment, such as massage, &c. The only medicines I gave in any of these cases were potass. bicarbonate with quassia.

Other Complaints.

In complaints such as lumbago, subacute rheumatism, muscular rheumatism, or fibrositis, as it is called now, and bruises, considerable relief is given by the application of the extract as shown below.

Lumbago.—Foment the back well with hot water, and whilst the skin is red have the ointment well rubbed on three or four times a day. Sometimes the liniment composed of two parts of the extract and one part of lin. saponis co. acts better. The patient must be kept in bed for a day or two to give the parts a rest.

Rheumatism.—In the various forms of subacute, chronic, muscular rheumatism or fibrositis a liniment made of 2 parts of ext. solani to 1 part of lin. saponis rubbed on the part will in most cases give relief after the first or second application. The pain may return in a day or two, but another application will again relieve. If the pain should prove not to be so easily abated, then a double layer of lint soaked in the liniment and covered with protective and bandaged on, but allowing free movement of the limb, and renewed every day, will soon produce the desired effect. The ointment also can be used in the same way—i.e., either rubbed on twice a day or spread upon lint and bandaged on. In some cases the ointment seems to act better than the liniment, but up to the present I am unable to indicate which preparation is suitable to the respective symptoms. In connexion with chronic rheumatism or arthritis of the finger-joints which it may be necessary to treat with the extract, and in order to ascertain easily and quickly the circumference of these various joints and the variations under treatment, I have devised an instrument called the digit meter. It consists of a number of rings accurately gauged and numbered. The difference between each ring is 2 mm. in the internal circumference of the ring. It is made by Messrs. Down Brothers of St. Thomas's-street, S.E. A meter has also been designed for measuring the inflammatory swelling around the great toe-joint in cases of acute gout.

Bruises.—A very severe bruise accompanied with active pain and with swelling, such as a badly sprained ankle, requires the hot fomentation for a day or two, the active pain being very quickly relieved and the swelling gradually going down. When the swelling is nearly gone there is usually some passive pain left; for this the ankle should be strapped with the emplast. solani for a few days. In bruises of a slighter nature the pain is quickly relieved by the application of the liniment or ointment either by rubbing or by being bandaged on the part in the way mentioned previously.

I have found that this method of treatment relieves pain much more quickly than the lead and opium lotion.

Clapham-road, S.W.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

PRIMARY SARCOMA OF THE LUNG.

BY EDWARD C. B. IBOTSON, M.D., B.S. LOND.

THE points which I think make this case worth recording are: (1) the rarity of the disease; (2) its unusual duration; (3) the difficulty in diagnosis; (4) the pyrexia attending it; (5) the value of the Roentgen rays in diagnosis; and (6) the crossing of the metastases to the opposite side.

I was first called to the patient on April 4th, 1913. He had been ill for two years before I saw him, suffering from chronic cough and pain in the chest and also from an abscess in the right antrum of Highmore, which had been opened through the alveolus of one of the right upper molar teeth. He was a stout man with everywhere a considerable amount of subcutaneous fat. He complained of weakness and pain in the lower extremities, and believed himself to be suffering from consumption. His family history was of no value in diagnosis. The throat was somewhat congested and irritable, and the tongue and lips were rather beefy and swollen. There were no physical signs in the chest. The reflexes were normal, and the grasp was strong. Soon after I first saw the patient he began to expectorate blood. His sputum was examined at Dr. G. L. Eastes's laboratory, and neither tubercle bacilli nor cellular forms were present, but some bacilli resembling Friedländer's. The temperature was raised every evening from the first time I saw him to 101°, 102°, or 103° F. In May some dulness manifested itself about the right base and the chest was needled, but nothing save blood was withdrawn. In June the patient became somewhat better. He went on a visit to Wiltshire, and on his return journey was seen by Mr. A. Rendle Short, who explored the chest, but found nothing but blood, and regarded the case as one of primary malignant disease of the right lung. Mr. Short operated successfully on the antral sinus.

The patient was admitted for diagnostic purposes in July into the Cardiff Infirmary under Dr. W. Mitchell Stevens, and the X rays revealed a dark shadow extending from the liver to the right clavicle. A definite diagnosis of malignant new growth was thus made. The patient returned home, and at his own wish that something should be done, a considerable number of injections of Coley's fluid were administered near or into the diseased lung. He had several intervals of freedom from pain, cough, and pyrexia after the injections. In November and December the whole of the right chest showed absolute dulness on percussion. The hæmoptysis became worse in January last, and also a number of enlarged glands became manifest in the left anterior triangle of the neck. Numerous enlarged veins began to form over the front of the thorax and the neck began to swell. The face also became swollen and cyanosed. In February distinct bulging of the right thorax was manifest. At the commencement of March breathing could only be carried on in the upright position, and on the 3rd of the month the patient died very quietly and peacefully from heart failure, his pulse for a long time having been feeble and rapid.

As regards etiology, like all sarcomatous growths

the origin of this particular growth seems only explicable on the "cell-rest" theory of Cohnheim. The patient's wife told me that he had had a cough all his life. The discharge from the sinus in the antrum merely aggravated the symptoms, and cannot be considered to have any bearings on the etiology. I sent one of the enlarged cervical glands to Dr. Eastes's laboratory, where a very beautiful section was made revealing the features of a typical, rather large round-celled sarcoma. Sir William Osler states that the usual duration of primary lung sarcoma is from six to eights months and that sarcoma is rarer than carcinoma. This particular case appears to be unique in its slowness of development

Briton Ferry, Glam.

THE LIFE-SPAN OF NEGROES.

BY HUGH S. STANNUS, M.D. LOND., D.T.M. & H. CANTAB.,
MEDICAL OFFICER, NYASALAND ADMINISTRATION.

IN an annotation in THE LANCET of Nov. 29th, 1913, under the heading "Mortality Among African Negroes," there are some references to observations made by Dr. R. Mouchet in the Congo published in the *Archiv für Schiffs- und Tropen-Hygiene*. Your annotator asks the question: "At what age does a negro in tropical Africa die?" and appears content to accept Dr. Mouchet's observations as the answer to that question. I, unfortunately, have not got the original article to refer to here, but as a medical man with some nine years' experience of another part of tropical Africa, I write to put down a few observations of my own on natives of Nyasaland, in order to prevent readers of your annotation going away with the idea that all the conditions mentioned in the above article are true for the whole of tropical Africa. Dr. Mouchet is of opinion that natives die far younger than Europeans. He says a grey-haired native is rare; "cataract, tumours, atheroma, and kidney disease are hardly ever found."

In Nyasaland (the natives are all of Bantu stock) white-haired natives are to be commonly seen in any village, and search among them reveals quite a fair proportion of cases of senile cataract. It is true that it is impossible in the absence of official birth registration to ascertain the exact ages of these individuals, but in some the approximate age can be deduced from relative facts and dates. A well-known Yao chief, Chemposa, whose age must be approximately 60–65, is a grey-haired man, but still quite active, and in his village there are many who appear older than he.

That natives may live to a very old age is, I think, borne out by the photograph of a white-haired old woman met with near Lake Amaramba, the subject of a double cataract, whose pulse had slowed down, owing to her not having moved for many years, to 40 per minute. Her son and daughter were grey-haired old people, and her grandson, a man of middle age, had a son who might have had children. May I suggest that Dr. Mouchet's observations were possibly limited to certain classes of natives, and that he had not in Léopoldville opportunities for seeing the old people who remain in their villages? The same thing, I think, probably accounts for his statistics as to the cause of death. In 37 out of 100 necropsies he found tuberculosis as the cause of death, but these figures cannot surely be true for the whole population of the country. Judging by this country, it is the over-civilised, over-clothed males of young adult age who travel and live in townships that are most likely to come to the post-mortem table, and it is exactly among this class of native that tuberculosis is seen. I agree with Dr. Mouchet that atheroma and kidney disease are comparatively rare among natives, but judging by my own clinical experience I am inclined to the

opinion that malignant growths are not so uncommon as is generally supposed. That natives may die younger than Europeans may be true, but that none or few reach old age I look upon as one of the many myths about natives which have been believed in the past and are very difficult to eradicate.

Zomba, Nyasaland.

LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY, LIMITED.—The annual general meeting of this society was held at 32, Craven-street, Strand, London, W.C., on March 25th. Mr. C. M. Fegen took the chair in the absence of Dr. G. A. Heron, the President. The chairman, in presenting the annual report, which was referred to in THE LANCET of March 21st (p. 842), pointed out that, with the passing of the National Insurance Act, the work of the society had increased, and would materially increase in the future. He referred with pleasure to the financial statement at the end of the report, which showed that the society was in an excellent position having regard to the number of members. The society had always been solvent, but its position was strengthened owing to the establishment of the insurance scheme. The members were asked to pay an addition to their usual subscription, and that addition had provided a great deal of protection which they did not have before from the society. Dr. W. Knowsley Sibley criticised the conduct of the council in the action against St. John's Hospital for Diseases of the Skin, and the chairman and the financial secretary replied, maintaining that his criticisms were founded on misconceptions as to the facts of the case. The report and balance-sheet were then adopted, and Dr. Heron was appointed president of the society for the ensuing year. The vice-presidents, the treasurer, the retiring members of council, the secretaries, and the auditors were re-elected, and the meeting terminated with a vote of thanks to the chairman.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Laryngeal Tuberculosis.—Tonsils and Adenoids in Children.

A MEETING of this society was held on March 30th, Sir DAVID FERRIER, the President, being in the chair.

Sir STCLAIR THOMSON read a paper on Three Years' Sanatorium Experience of Laryngeal Tuberculosis. He said that the outlook for patients suffering from tuberculosis of the larynx is less gloomy than it was 32 years ago, but that it is still a serious complication. The following conclusions were advanced: 1. The larynx is frequently involved in pulmonary tuberculosis. Even in the selected cases sent to a sanatorium it is met with in 25·6 per cent. 2. A considerable number of cases (102 out of 795) are sent to a sanatorium without their showing active tuberculosis. These cases, if included in statistics, would largely help to invalidate conclusions. 3. In patients of the middle class laryngeal tuberculosis is met with just as frequently in females (28·3 per cent.) as in males (24 per cent.). 4. Laryngeal tuberculosis occurs much more frequently (13·7) in the early favourable cases of phthisis than is generally recognised. 5. In the more decided cases this proportion is doubled (27·1 per cent.), and in the advanced cases it is trebled (40·8 per cent.). 6. The expectation of life amongst consumptives is markedly decreased by the complication of laryngeal tuberculosis. 7. As a factor in prognosis, the laryngeal condition deserves much more regard than it has hitherto obtained. 8. Laryngeal tuberculosis may not infrequently be present, although the patient makes no complaint of the throat and although the voice is unaltered. Hence— 9. The larynx should be carefully inspected in every case of pulmonary tuberculosis. 10. Arrest of laryngeal tuberculosis can be effected in a sanatorium in 20·7 per cent. of all cases. 11. Improvement in the lung and the larynx frequently, but not invariably, progress *pari passu* in a sanatorium. 12. In certain cases the larynx improves while the lung retrogresses. The converse takes place rarely. 13. Limited and slight laryngeal lesions, particularly in mild and moderately severe cases of phthisis, may become arrested spontaneously with sanatorium treatment. 14. The galvano-cautery is the best weapon we have at present for local treatment. It was only indicated in 20·22 per cent. of all cases, and it completed the cure in 41·66 per cent. of the cases in which it was employed. 15. These satisfactory results have not, so far as the author knew, been secured by any methods outside a sanatorium. 16. Sanatorium treatment is at present the first and most valuable method we have for arresting laryngeal tuberculosis. 17. Local measures are much more promising under sanatorium conditions. 18. At present the diagnosis of tuberculosis is too long delayed, or the patient is sent to a sanatorium much too late to effect a cure. Hence—19. With our present methods of therapeutic resources we must, for progress, urge the importance of early diagnosis and then prompt sanatorium treatment.

Dr. F. DE HAVILLAND HALL said that in the past he had been pleased by the beneficent effects of lactic acid of gradually increasing strengths. No doubt the results would have been still better if sanatorium treatment had been employed as well.

Dr. T. D. ACLAND remarked that he was glad to hear Sir StClair Thomson's opinion of the effect of tuberculin. The author had said that he had not seen any benefit from it, but he (Dr. Acland) was quite certain that he had seen harm result.

Dr. P. HORTON-SMITH HARTLEY asked which cases were the most suitable for galvano-cautery, and what treatment was used for those with definite ulceration. He spoke of the difficulty which the physician experienced in detecting cases early enough for the most favourable prognosis without swelling the numbers of the patients at the sanatorium who could not be classed definitely as tuberculous.

Dr. S. VERE PEARSON was also anxious to have formulated the indications for the use of the galvano-cautery. He referred to the question of punching out or removing the epiglottis. He had seen cases where only the epiglottis was affected. Should the epiglottis be removed under those circumstances? In cases of doubtful diagnosis he thought that the patients should be given the benefit of the doubt, which to-day meant sending them to a sanatorium. He also spoke of the possibility of treatment by nascent iodine. By this method sodium iodide was given internally, and either the larynx sprayed with hydrogen peroxide or ozone inhaled. In this way nascent iodine was set free.

Dr. N. D. BARDSWELL said that at the King Edward VII. Sanatorium the cases were subjected to the following examination: first, the sputum was examined by all modern methods for bacilli; secondly, the complement-fixation test was employed; thirdly, the opsonic index was estimated both at rest and after exercise; and fourthly, if these tests were negative the subcutaneous tuberculin test was used. If the results of the last three procedures were negative the patient was probably not tuberculous. A choice had often to be made between the general clinical picture and the laboratory tests, and the whole question of diagnosis was still unsettled. Although at present the cases which could not be shown to be actively tuberculous were excluded from statistics to disarm criticism, it was probable that in the future some of them might be shown to be examples of latent tuberculosis. He would go farther than Sir StClair Thomson and say that the larynges of all patients suffering from pulmonary tuberculosis should be examined, not once, but periodically. With regard to local treatment, the galvano-cautery gave the best results, but was of very limited application. He had seen ill effects from its use. It might do harm if applied to active lesions when the general condition of the patient was unfavourable and the pulmonary disease was not quiescent.

Dr. H. TILLEY, speaking of active treatment, said that he never interfered with a laryngeal lesion if there were active signs in the chest, and the only lesion in the larynx suitable for local treatment was a limited one. The galvano-cautery was only applicable for a small percentage of cases. Rest was so essential that everything should be done to prevent coughing. Few methods gave more relief in this respect than the inhalation of vapours such as those containing creasote. He had seen good results with the use of nascent iodine in chronic lesions of the lupoid form. He had not used lactic acid for the last five years.

Dr. G. WILLIAM HILL pointed out that the paper dealt with statistics of a very limited group of cases—namely, those of patients who obtained admission to a sanatorium, and questioned whether the earlier statistics could be regarded as vitiated if this fact were taken into account. He spoke of the difficulties of determining the presence of active disease in the lung.

Mr. E. B. WAGGETT said he would be interested to hear a comparison between the results of private cases and those in sanatoriums. His experience was that tuberculomata were benefited by the galvano-cautery whilst the pseudo-œdematous form of laryngeal tuberculosis did badly.

Dr. W. CAMAC WILKINSON said that from a consideration of the statistics one must be impressed by the hopelessness of the treatment of laryngeal tuberculosis by ordinary methods. He had given up the use of lactic acid in 1897 because he found that tuberculin gave much better results than other methods. It was not necessary to take selected cases, but he had obtained good results with tuberculin, even in those which had been rejected. He was convinced that tuberculin, given in large doses and in no other way, would in future prove to furnish far better results than any other method, including the galvano-cautery. The results were infinitely better than those mentioned in the paper. The question was a difficult one, as all such statistics lacked relativity.

Mr. H. W. CARSON spoke of the value of rest and of continuous inhalation for reducing cough. There was a stage when the lung condition was quiescent but where no improvement continued in the laryngeal condition. In these cases the galvano-cautery did good service. He had found that only in those patients who could respond to tuberculin were good results obtained.

Sir STCLAIR THOMSON, in reply, said that there was very little call in sanatoriums for symptomatic treatment. One could be more certain of what one was doing with the galvano-cautery than with lactic acid. Its use was to start Nature's process of healing by fibrosis. It was indicated for localised

indolent lesions, and where the general condition was favourable and the signs were not those of active tuberculosis. The presence of tubercle bacilli was not necessarily a contra-indication.

Mr. T. B. LAYTON read a paper entitled "Tonsils and Adenoids in Children: a Plea for Fewer Operations," which will appear in full in a later issue.

HUNTERIAN SOCIETY.

The Causes and Treatment of High Blood Pressure.

A MEETING of this society was held on March 25th, Mr. W. J. M. ETTLES, the President, being in the chair.

The annual discussion of the society was opened by Dr. F. DE HAVILLAND HALL, who read a paper on the above subject. He pointed out that blood pressure normally varied with the age and sex of the individual. A ready method of remembering the average blood pressure was to place 1 before the age of the person, and this would give in millimetres of mercury the pressure appropriate to the age in question, but over 40 the figures were too high. In women the pressure was usually 10 mm. below that of a man of corresponding age. A wide range of variation in pressure was met with in individuals. Dr. Hall quoted with approval the custom of certain American life insurance companies, who require a record of the systolic pressure whenever the age of the proposer is 45 years or over, and fix a limit of about 150 mm. at and over which no life is accepted on normal terms. The time of day and the condition of the nervous system, he said, influence blood pressure. A strong, healthy man has normally a blood pressure 5 to 15 mm. above that of a weakly individual. Active muscular exertion causes an increase of blood pressure, as does also the ingestion of a large amount of liquid, and especially beer. The onset of acute fever and severe pain are accompanied by increased blood pressure. Great stress was laid on the toxæmia of gastro-intestinal origin due to over-eating as a very important cause of increased blood pressure. The constant strain to which the arteries were thereby exposed led to arterio-sclerosis, and that which at first was only a temporary condition, the pre-sclerotic stage of Hachard, became a permanent state of high tension. Kidney disease was stated to be one of the most certain causes of increased blood pressure, and a repeated and constant pressure of over 200 mm. would suggest the presence of some form of nephritis. Gout, lead-poisoning, malaria, syphilis, and oral sepsis were mentioned as causes of increased blood pressure. Alcohol, either directly or by its effect on the gastro-intestinal tract, was a cause of high pressure; tea and coffee had also some action in raising the pressure. Tobacco caused an increase of pressure, but the habitual smoker had usually low pressure. Finally, mental strain and worry, especially if combined with deficient exercise and too rich living, were stated to be potent causes of high blood pressure. Before entering upon the question of treatment Dr. Hall insisted upon the importance of recognising that so far from high tension being the enemy which was to be met and overcome, it was often the patient's great ally, and was the means whereby the functional activity of the kidneys was maintained and life preserved. He laid stress upon the disastrous effects resulting from the injudicious employment of measures to reduce high pressure, and also upon the danger of a stimulating plan of treatment in arterio-sclerotics with high pressure. Among the measures capable of reducing high pressure rest, he said, takes a prominent position, and in patients with a pressure of 200 mm. and upwards, especially if combined with any signs of heart failure, a period of absolute rest should be enjoined. Many cases, however, of high pressure occur in people who take too little exercise, and for them suitable exercise, such as riding, cycling, walking, and golf, should be prescribed. The methods of Schott and Oertel were alluded to. Massage was recommended in cases in which sufficient exercise could not be taken. The condition of the skin required careful attention; warm baths or Turkish baths might be ordered in suitable cases. The electric light bath and the D'Arsonval current of high frequency often gave good results. If obesity were present the Bergonié system might be warmly recommended. In many cases the Nauheim treatment gave excellent results. Diet was all-important; the quantity as well as the quality of food required careful supervision. Substances rich in nitrogen, such as butcher's meat, should be avoided. Soured milk was useful in dyspeptic cases. Tea and coffee should be taken with great moderation. Alcohol was almost always prejudicial in cases of high pressure. An abundant supply of pure water, preferably distilled, to drink was indicated. Tobacco should be indulged in with the greatest moderation, and if there were anginal symptoms it should not be allowed. Drugs played a secondary part in treatment. Calomel, blue pill, and the saline aperients were most useful. Iodides given in small doses and for a considerable period of time had a very beneficial effect. In patients giving a positive Wassermann reaction mercury should be administered, preferably by inunction. Salvarsan was not recommended. In cases of high pressure at the menopause attended with obesity small doses of thyroid extract, together with a combination of bromide and iodide of potassium, would be found most useful. If the iodides were badly borne sodium nitrite in doses of 1 to 2 grains in chocolate tablets might be given. The hippurate of lithium in doses of 1 to 2 grains given twice daily would be found to have a good effect. The more powerful and more quickly acting vaso-dilators, such as amyl nitrite, nitroglycerine, and erythrol tetranitrate, should be reserved for emergencies—e.g., anginal or dyspnœal attacks—rather than for regular use. Blood-letting was a remedy which was of the greatest possible service in certain cases of high blood pressure. Nature itself seemed to indicate the appropriate remedy in many cases by the onset of copious epistaxis.

Dr. W. LANGDON BROWN called attention to the difficulty in getting a correct record of the blood pressure in nervous subjects, in whom the mere attempt to make the observation raised it temporarily, and also to the drop in the pressure which occurred as old age advanced. Men of over 80 usually had a pressure of about 140 mm. Other factors in producing high pressure were over-action of certain ductless glands, such as the pituitary and suprarenal, and the putrefactive diamines formed in the bowel, which had been shown to be definitely pressor in action. The great and abiding difficulty which beset treatment was that the pressure requisite for any given degree of arterio-sclerosis was not known. What was known was that the rise of pressure was a conservative measure and must not be antagonised without reference to the cause of the rise. But just as hyperpyrexia might have to be treated, whatever the cause of the fever, so hyperpiesis might have to be treated as an emergency. Then, and then only, was the time for nitrites. Amyl nitrite was best for immediate lowering of pressure, as in anginal attacks; nitroglycerine would only lower pressure for 40 minutes, while erythrol tetranitrate in ½-grain doses could do so for six hours. The chief drawback to its use was the severe headache it sometimes caused. Iodides did not lower pressure by vaso-dilatation, but by eliminating toxins, and were therefore not included in this condemnation. Sulphates acted not only as aperients, but by combining with putrefactive substances had an anti-toxic action as well. The most important thing was to detect these cases in the presclerotic stage, before organic changes had occurred, and then to treat them by putting them in the way of physiological righteousness rather than by depressor drugs.

Dr. S. RUSSELL WELLS emphasised the importance of recording the diastolic as well as the systolic arterial pressure. In cases of aortic regurgitation, for instance, the systolic pressure as recorded by the Riva-Rocci instrument might be very high and the diastolic pressure very low, so that the continuous strain to which the arterial wall was exposed was not nearly so great as it was in cases of arterio-sclerosis with much lower systolic and higher diastolic pressures. He referred to some experiments which he had made with specially constructed rubber tubes, showing that these tubes could stand a very high systolic pressure, provided that the diastolic pressure was small, while a high diastolic with a comparatively low systolic produced aneurysmal dilatations. He then detailed some experiments and observations made by Professor Leonard Hill and himself which led them to suppose that the character of the blood stream at the threshold of any capillary area materially depended upon the state of the wall of the artery supplying that area. If the arteries going to a part had

hard and more or less rigid walls the blood pressures would approach those in the aorta and show high systolic and low diastolic readings; while if the arteries were soft and distensible the blood stream would be broken down to something more approaching a continuous flow, the systolic pressure being much lower and the diastolic higher than in the previous case. Since all the arteries and to a greater extent the arterioles were contractile and under the influence of the nervous system and with an increased tone or contraction their walls became harder and less labile, it might well be that the organism could with the same heart-force vary the pressure at the threshold of any capillary area between an intermittent pressure with a high systolic beat and an almost continuous one with a lower systolic pressure. In the one case there would be a hammerlike percussive wave beating upon the capillaries, and in the other a more continuous pressing in of the blood at a lower tension. It was suggested that the throbbing felt and the capillary pulse observed in an acutely inflamed area might be due to an increased tone of the walls of the afferent artery which lessened their resilience; hot fomentations relieved this throbbing by relaxing the contraction of the vessel walls. The observations of Leonard Hill and Martin Flack on blood and secretory pressures in secreting salivary glands were alluded to, and it was pointed out that under certain conditions a temporary rigidity of the arteries of the arm might give a raised systolic reading by causing the full systolic crest of the aortic pressure to be conducted down to the armlet without there really being any rise of the systolic pressure over the body generally. Dr. Langdon Brown uttered a word of caution against too lightly attempting to lower even a very high systolic pressure in cases of arteriosclerosis without regard to the patient's general condition, and instanced the case of a patient of his own who for the last four years had shown systolic readings, taken with the Riva-Rocci instrument, of 300 mm. of mercury, whose general condition became notably worse when these readings fell to 250, and improved again when they returned to their former level.

Dr. O. K. WILLIAMSON said that, as regards diagnosis by means of a sphygmomanometer, cases were met with in which, owing to arterial thickening associated with spasm at the site of compression, the instrument yielded a high reading when the actual blood pressure was certainly not above normal. For instance, a case of hemiplegia more or less sudden in onset might be met with in which such a condition of the arterial wall was present, and in which the instrument yielded a high reading but in which the blood pressure was actually low, and in which the symptoms were due to spasm of a branch of the middle cerebral artery. If in blind obedience to the instrument depressant treatment were adopted the condition might easily pass into one of cerebral thrombosis, whereas by using the finger as well as the sphygmomanometer such a grave error could be avoided and the correct treatment adopted—viz., the use of a vaso-dilator combined with a cardiac stimulant. Hence the vital importance of using the finger as well as the instrument in the examination of the pulse. In regard to treatment naturally cases in which the pressure was temporarily raised yielded better results than did those in which the condition was persistent, and in which the arterial changes were more widespread. It was often impossible to tell from one examination which of these two classes was being dealt with, for in a case in which there were extensive changes involving especially the splanchnic arteries the arteries accessible to superficial examination might not reveal obvious disease. In cases in which there was no special symptom which called for treatment, although he agreed with Dr. Hall and Dr. Langdon Brown that it was undesirable to make a routine practice of reducing the pressure, still it seemed to him advisable to try cautiously the effect of reducing the pressure, inasmuch as the continuance of the condition was, other things being equal, in itself harmful. Great caution was, however, necessary in such cases, and the effect of such treatment on the patient's general health and symptoms should be noted, as many of these patients would not bear reduction in their blood pressure. Treatment was also called for in cases in which high blood pressure was associated with marked local spasm of arteries and consequent interference with function in areas which these supplied; it then became, especially in the case of the heart or brain, an urgent matter. In regard to treatment by rest, whilst rest in bed was in many cases invaluable, he would add a word of caution against overdoing it. He had seen cases which had been treated by rest in bed for several weeks without showing any appreciable fall in pressure, but when the patients had been allowed to get up and walk about they had quickly experienced a fall. As regards drugs, it was of great importance to secure a regular free action of the bowels by means of saline aperients, and an occasional dose of calomel was of great value. He had obtained good results from small doses of iodide of potassium, and in cases in which this was ill borne, from iodipin, and especially from sajodin, the last-named being given in tablet form in doses of 7½ grains. Of the vaso-dilators he had found erythrol tetranitrate the most useful. He had found guipsine serviceable in some cases; it was given in pill form in 5-grm. doses, and in amounts varying from 6 to 25 pills in the 24 hours.

Dr. LIONEL C. E. CALTHROP (Woodhall Spa) said that many cases of high blood pressure were sent to Woodhall Spa for treatment owing to the fact that it was the only mineral water in Great Britain which contained potassium iodide, the value of which in this condition was now established. The water also contained a certain quantity of bromide of potassium, constituting a useful adjunct to the iodides in irritable states. The action of this water on the bowels and kidneys assisted its beneficial effect. He thought with Dr. de Havilland Hall that though in some cases Nauheim baths were suitable, yet in others the ordinary hot mineral baths or the electric light baths, which were more eliminative in character, afforded greater relief. Diet and drink were important factors, also rest and moderate exercise, such as golf. Owing to its special features he thought this spa admirably adapted for the treatment of these cases.

Dr. LESLIE C. THORNE THORNE said that his investigations of blood pressure in cases of cardiac disease, including a large number of patients undergoing the Nauheim treatment, had convinced him that the record of minimum blood pressure was almost as important as that of the maximum, as there existed two very distinct classes of cases in which hypertension was present, and these two classes could only be differentiated by a comparison of the ratios of the maximum and the minimum blood pressures. In the first class both the maximum and the minimum pressures were raised, but the ratio of the two pressures was altered, there being a greater difference between them than in a normal case. The normal difference between the maximum and the minimum pressures was about 50 mm. Hg, but in a case of this kind there might be a difference of over 100 mm. Hg between the two readings; for example, the minimum pressure might be 120 mm. Hg and the maximum 250 mm. Hg. A difference in ratio of this kind, he believed, indicated definite vessel degeneration. In the second class, both the maximum and the minimum pressures were raised, but the ratio between the two was unaltered; for example, the maximum pressure might be 150 mm. Hg and the minimum 100 mm. Hg. He was of opinion that readings of this kind indicated a raised pressure due solely to hypercontractility of the arteries and capillaries—a presclerotic condition. In the first class, suitable treatment might lower the pressure to a certain extent, and would undoubtedly relieve dangerous symptoms, but the decrease in pressure would not be maintained, and if drugs were pressed to try to maintain it the patient would be rendered worse rather than better. In the second class, suitable treatment—notably, Nauheim baths and dietary—would, by improving nutrition and increasing metabolism, bring the pressure down to normal, and this condition might, with care, be maintained for years. He was convinced that many of the symptoms accompanying hypertension were due to cardiac failure and consequent dilatation, and he found that if this dilatation was treated and cured dangerous and painful symptoms were relieved. He had treated a number of cases of hypertension due to chronic nephritis with Nauheim baths, and had obtained very satisfactory results, but it was necessary in this class of case to maintain the baths at a temperature higher than usual, ranging from 98° to 96° F., and to give the still baths and not the carbonated. The fact that many medical men were under the erroneous impression that a Nauheim bath was necessarily a carbonated bath, and therefore started a course

with CO_2 baths, was responsible for many failures where such methods were tried.

LIVERPOOL MEDICAL INSTITUTION.

Pathological Specimens of Tuberculosis.—The Rôle of Tuberculosis.—Pulmonary Tuberculosis in Children.

A PATHOLOGICAL meeting of this society was held on March 26th, Professor R. J. M. BUCHANAN, Vice-President, being in the chair. The meeting was devoted to tuberculosis, and an extensive exhibition of specimens was shown of tubercle as it affects the human body, as it occurs naturally among animals, and the lesions which are produced experimentally in animals.

Mr. C. THURSTAN HOLLAND showed a complete series of radiographs of lesions in all parts of the body.

Dr. EDGAR STEVENSON, Mr. R. E. HARCOURT, and Professor BUCHANAN exhibited specimens and illustrations of Tuberculosis of the Eye.

Mr. K. W. MONSARRAT, Professor E. E. GLYNN, Dr. W. HANNA, and Dr. NATHAN RAW showed lesions of both man and animal, while Dr. Raw also showed cultures of human, bovine, and avian tubercle bacilli.

Professor H. BRIGGS exhibited specimens of five cases of Tuberculosis of the Uterus and Uterine Appendages.

The exhibition of local material was enhanced by the loan of a series of specimens of human and animal tuberculosis prepared by Professor S. DELÉPINE by his special arsenious jelly method.

Dr. A. STANLEY GRIFFITH (Cambridge) lent specimens demonstrating the experimental lesions produced in the larger animals.

Dr. EASTWOOD and Dr. F. GRIFFITH lent a complete series of cultures of the various types of bacilli, a series of rabbits' lungs showing the "rabbit test" of virulence, and also specimens of lesions in larger animals, natural and experimental.

Dr. RAW read a note on the Rôle of Tuberculin in Tuberculosis, and confined himself to the pathological effects of tuberculin when injected into the human body. He gave his methods of dosage and his reasons for using opposite strains of tuberculin in his "bovine" and "human" cases. His conclusion after extensive experience was that tuberculin was good in localised tuberculosis, but not if there were secondary infections.—Dr. T. R. BRADSHAW thought that tuberculin would never revolutionise tuberculosis.—Dr. G. A. CRACE-CALVERT found that patients receiving tuberculin showed distinct improvement in many ways—improvements which were not so visible in patients not so treated.—Professor BUCHANAN thought that the multiplicity of tuberculins on the market led to confusion.—Dr. RAW replied.

Dr. S. W. MCLELLAN read a paper on the Incidence of Pulmonary Tuberculosis in children. He pointed out the danger of error arising in statistics from the personal factor of the collector, and how this might be controlled. The methods of investigation were considered, and also the fallacies of the various specific tests. The question of glandular and pulmonary disease was gone into, and how the former predominated. He considered that pulmonary tuberculosis in children was by no means so common as was generally supposed, and suggested various means whereby the diagnosis might be checked. He analysed 162 cases which had been personally investigated at the Liverpool Chest Hospital, all of which had been previously diagnosed as phthisis, and traced their after-history, pointing out that cases of chronic fibroid pneumonia, or bronchiectasis, frequently gave all the so-called classical signs of phthisis, but that the process of these diseases was very chronic and no tubercle bacilli were ever found in the sputum.—Dr. C. RUNDLE discussed the paper, saying that in his opinion anatomical diagnosis was better than clinical.—Dr. J. R. LOGAN had used Moro's test with success. In his opinion tuberculosis was common in children and the majority recovered.—Dr. C. J. MACALISTER, Dr. N. P. MARSH, Dr. H. ARMSTRONG, Dr. W. B. WARRINGTON, and Professor BUCHANAN agreed that pulmonary tuberculosis was rare in children.—Dr. MCLELLAN replied.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

Exhibition of Specimens and Reports of Cases.—Malaria as a Complication of the Puerperium.—The Use of Pituitary Extract in Labour.

A MEETING of this section was held on March 6th, Dr. M. J. GIBSON, the President, being in the chair.

Dr. ALFRED J. SMITH showed a specimen of Fibromyoma presenting unusual features. The patient consulted him for painful tumour in the lower abdomen. On opening the abdomen difficulty was experienced owing to adhesions between the tumour and the abdominal walls, and it was necessary to open higher up. It was then found that there was a coil of small intestine attached to the top of the tumour. Peculiar peritoneal folds were found hanging from the tumour simulating intestine.

The PRESIDENT reported a case of Combined Intra- and Extra-Uterine Pregnancy. The patient, aged 36, married 14 years, had had seven children and two abortions. The youngest child was now three years old. She aborted at the fourth month in September, 1912, and again at the sixth month in August, 1913. On Nov. 26th she stated that she had not menstruated since Sept. 17th. Pain, not severe, in her right side low in the abdomen and extending to her back had begun about ten days previously. No bleeding. Examination revealed an enlarged, softened uterus, acutely anteflexed. To the right of it was a very tender, mobile, non-pulsatile tumour of the size of a small hen's egg. The patient came into hospital three days afterwards. She had had very severe pain in the interval. Periodical attacks of acute pelvic pain continued. A tubal pregnancy complicating an intra-uterine pregnancy was diagnosed. On opening the abdomen free blood was found in the pelvis with clotted blood in Douglas's pouch, an enlarged tube, and a pregnant uterus. The tube was removed, and the patient made an uninterrupted recovery for two weeks, when she expelled the other ovum. She left the hospital ten days later. Whether the tubal pregnancy was due to the second ovum becoming impregnated after the first, and consequently finding its passage to the uterus impeded by the decidual reaction in the tube, was an interesting question.

The PRESIDENT also reported a case of Early Tubal Pregnancy and one of Unruptured Interstitial Tubal Pregnancy.—Dr. E. HASTINGS TWEEDY wished to know what was done with the tube in the case of interstitial pregnancy. He presumed the tube was broken in order to clear out the ovum.—The PRESIDENT, in replying, said that as regarded the unruptured interstitial pregnancy he did not interfere with the tube at all; the incision was made low down, and the ovum turned out of its capsule. He did not believe that he closed the interstitial portion of the tube when suturing the capsule. With regard to the combined intra- and extra-uterine pregnancy, there was no doubt whatever about the tubal pregnancy, as the microscopical examination proved the presence of a recent ovum.

Dr. BETHEL A. SOLOMONS read a note on Malaria as a Complication of the Puerperium, in which he commented on the scarcity of cases to be found in the literature. The chief case which had come under his notice was that of an Indian official's wife with a history of an attack of malaria two years previously. The confinement was complicated, and there was an extensive laceration of the perineum and vagina. The diagnosis between sepsis and malaria was extremely difficult. The absence of growth after lochia and blood had been cultured, and the presence of the plasmodium malariæ in the blood clinched the diagnosis. The patient recovered after a stormy puerperium.—Dr. TWEEDY said he had seen two or three cases of malaria in his practice, and he also saw one of Dr. Solomons' cases, in which he suggested malaria as a possible cause of the temperature. He emphasised the importance of taking uterine cultures early. With a temperature like that in the case cited by Dr. Solomons, if the culture was negative no time should be wasted in getting a specimen of the blood, and he advised that a good quantity of blood should be taken. He was convinced that the case was not one of pure malaria, but that some septic infection was associated with it.—Dr. SOLOMONS, in reply, said that with reference to Dr. Tweedy's suggestion

that the malaria was not the only cause of the temperature, he considered that the vaginal condition possibly aided in keeping up the temperature for a longer period than in an ordinary case of malaria.—Replying further to questions by Dr. STEVENSON, Dr. V. J. MCALLISTER, and the PRESIDENT, he said that Dr. R. J. Rowlette had examined the blood, but the variety of parasite was not stated. It would be interesting to know if the baby, which was a particularly fine specimen with no abnormality, was immune. The mother had been healthy during the whole pregnancy.

Dr. D. G. MADILL and Dr. R. M. ALLAN communicated a paper on the Use of Pituitary Extract in Labour, in which they reported the results of 147 cases. Referring to its effect on the uterus, they found that the contractions resulting from the drug retained their physiological character, and they regarded this as the fundamental principle governing its use in labour cases. They had never observed a tonic contraction. The interval between pains was diminished by about one half, and the effect of the drug lasted 50 minutes. There was an earlier detachment of the placenta. Regarding the effect on the fœtus, they often noticed an effect on the fœtal heart following the injection, but the child was born healthy. They reported four cases of fœtal death which might be due to the injection of the drug. It was tried unaided in one case to induce premature labour, and in two cases in conjunction with Champetier de Ribes' bag, all being successful. They considered the second stage, with the head well through the brim, as the best time for its administration, and in most of their cases the drug was given at this time. They had good results with it in post-partum hæmorrhage in combination with ergot. Its use was contraindicated in heart lesions, but probably not in nephritis. It was a valuable adjunct in cases of placenta prævia where version had been performed. They had six instances of post-partum atony of the uterus of a slight degree.—Professor A. C. SMITH said his only experience of pituitrin was in gynæcology. He was at present using it in cases of infantile uterus and the menorrhagia of young girls. Young rats who were fed on pituitrin extract grew to great size, and their genital organs were hypertrophied, and it was for this reason that he was using it. He also mentioned its utility in connexion with intestinal stasis after laparotomy. Pituitary extract had an action on the mammary gland.—Mr. SPENCER SHEILL had given the drug intramuscularly in about 27 cases; it took eight and a half minutes to act. Was the difference between the three and a half minutes experienced by the writers of the paper and his eight and a half minutes accounted for by the difference in the site of injection? He considered the drug less effective after scopolamine morphina.—Dr. TWEEDY recommended the use of pituitrin where curetting failed to stop hæmorrhage, and suggested using it before resorting to larger operations. He disapproved of its employment in contracted pelvis, and mentioned a case of rupture of the uterus, following quickly upon the administration of pituitary extract, brought under his notice by a doctor in America. He had found half of the contents of the 1 c.c. phials sometimes produced extremely good labour contractions. He always injected half and gave the remainder if it was not effective. He did not consider that cases delivered by forceps in the Rotunda Hospital could be compared with the cases where pituitary extract was given.—Dr. SOLOMONS said that most authorities agreed that whilst the drug was useful in cases of active abortion it was useless as an abortifacient. He was surprised that there were no lacerated cervices or ruptured uteri in any of the cases, as De Lee, in the "Year Book of Obstetrics," commented on these results of the drug. Where contracted pelvis was suspected pelvimetry should be done before administering pituitrin. He had given pituitary extract with excellent effect in cases of amenorrhœa with chlorosis.—Dr. MCALLISTER said undoubtedly these preparations increased the uterine contractions, but he did not consider that the contractions preserved their physiological character, the interval between the pains becoming too short. He considered the drug at its best where there was slight obstruction. The general opinion was that it was most useful and safest for the child during the expulsion stage. He was not sure that the results from pituitrin in the third stage were as satisfactory as those from ergotin. He had found the injection of pituitrin into the uterus preceding Cæsarean section very useful. Pituitrin markedly increased excretion of urine. In cases of retention of urine after operation his experience in the Coombe Hospital showed that it was useless.—Dr. HENRY JELLETT thanked Dr. Madill and Dr. Allan for the amount of work they had performed and for the valuable results brought forward. It had been found that the use of pituitary extract in 140 cases had not been followed by any bad results. As to its increasing fœtal mortality the results brought forward were strikingly directed to prove the contrary. In a large number of cases in which forceps were applied the necessity arose out of a delay in the second stage; if pituitary extract avoided this morbidity should be lower. In ante-partum hæmorrhage he emphasised the fact that delay after the hæmorrhage was checked was beneficial to the patient though not to the child. It was unwise to hasten delivery until the woman had recovered somewhat, then pituitary extract might be of value.—The PRESIDENT said he had seen two cases in which the administration of pituitary extract during the first stage had been followed by extensive laceration of the lower uterine segment. In a case of placenta prævia it was impossible to turn the child owing to the effect of the extract. He considered the extract contra-indicated in the first stage unless contractions were feeble, the stage prolonged, and the cervix neither diseased nor friable. In the second stage with uterine inertia it was excellent; after the third stage it should be combined with intramuscular injection of ergot. He had seen much trouble result from the injudicious use of the extract. It should be used not freely but with great care, and not at all in obstruction. —Dr. ALLAN, in replying to questions, said no change was noticed in the mammary gland. In the first cases the drug was given intramuscularly, but latterly subcutaneously. When given by the former method the pains came on quicker, but by the latter the pains were more gradual and at longer intervals. They had no experience of it with scopolamine morphine. The drug was never given in post-partum hæmorrhage alone, it was always combined with ergot; neither had it been administered in cases of eclampsia. In five cases the drug had failed to be of any use. In the year previous to the use of the drug there were 106 forceps cases at the Rotunda Hospital, and during the past year when it was given there were only 56 cases. No opportunity was afforded of trying the drug in a case of accidental hæmorrhage. Syringes were sterilised by boiling, and afterwards kept in sterilised water. There was no experience in any of the cases of cervical tears. It was agreed that the best results were obtained in the expulsion period. It was not considered that the drug had any advantage over ergot in cases of Cæsarean section, and the latter was always given. The drug should be used with caution, and the fœtal heart should be carefully watched.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 20th, Mr. A. Ernest Maylard, the President, being in the chair.—Dr. Alexander MacLennan read a paper on the Simplified Operation for the Cure of Hernia in Infants. He said that while the radical cure of hernia in the adult possessed a serious morbidity and some mortality, the operation in infants practically possessed neither. In the majority of text-books herniotomy in infants was advised only in cases of irreducible or strangulated hernia, or in cases where truss treatment, properly and continuously applied, had failed to retain the hernia. But truss treatment had many disadvantages, and there was no case known where an actual obliteration of the sac had followed the wearing of a truss, while in many cases in spite of apparent cure the hernia had reappeared later. Indeed, it was practically certain that no one in later life developed a hernia who had not had since infancy a sac ready formed. That the early operation was absolutely safe had been proved by the wholesale radical treatment of hernia in infants attending the Royal Hospital for Sick Children out-patient department. The credit for the initiative in doing hernias in out-patients belonged to Dr. J. H. Nicoll, and the operation which he (Dr. MacLennan) performed was so simple that the dangers associated with the radical operation had vanished. The cases selected were infants not over 2 years, in fair general health, with mothers of average intelligence, able and willing to give a little more attention than usual to the child. If phimosis was present the child was circumcised at least one month before the proposed

radical operation, though in exceptional circumstances the circumcision and radical cure might be done at the same sitting. Preparatory to operation food was withheld for three hours, but the bowels were not interfered with. Chloroform was the anæsthetic employed. An incision three-quarters of an inch long was made over the internal ring, and the sac when reached and freed was treated as in Macewen's operation. No deep sutures were used. The superficial wound was closed by one or two silkworm sutures, and dressed by a roll of gauze made to cover little more than the wound and retained in position by a piece of adhesive rubber plaster. Elaborate dressings were quite unnecessary, and only annoyed the infant. After a week the child was brought again to the dispensary to have the stitches removed." Done rapidly through a small incision, with the minimum of manipulation, dissection, and stitching, and without violence to the anatomy, this operation entailed little tax on the vitality of the child, and, indeed, caused less distress than a simple circumcision.—Dr. T. P. Grant (for himself and Dr. Matthew J. Stewart of Leeds) read a short note on Myeloid Tumours of Tendon Sheaths, with report of a case. As such tumours occurred with much greater frequency in the hands than elsewhere, it was supposed that slight and frequently repeated trauma might be of some etiological importance. The chief diagnostic points were that the tumour was small and slowly growing, painless in the earlier stages, and, unless it attained a considerable size, interfered but little with the movement of the tendon. It was freely movable on the bone, and the skin was moved equally freely over it. In the great majority of cases these tumours were of very low malignancy, and the method of treatment in the first instance should be by local removal only. The case reported was that of a female, aged 54, who had a tumour about the size and shape of a haricot bean on the radial aspect of the second phalanx of the left ring finger. Eight months before this appeared she had received a stab from a knitting needle exactly at that spot. The tumour was excised, and on microscopic examination was found to be largely fibro-sarcomatous in structure, containing, scattered throughout it, giant cells which stamped the growth as myeloid. It showed evidence of degenerative change apparently of a fatty nature.—Dr. Archibald Young described a case of Fracture of the Carpal Scaphoid and showed the patient and X ray photographs. The case was remarkable in that the bone was divided by a vertical break into a right and a left half, and one of these was again divided horizontally into a dorsal and a palmar fragment. The injury which caused the fracture had apparently been so trifling as to have escaped the patient's notice at the time. Dr. Young, with Dr. J. Shaw Dunn, also showed a large Sacro-coccygeal Teratoma removed from an infant, aged 11 months, with relative photographs, radiograms, and microscopic sections. These latter showed tissues derived from all three primitive layers —epiblast, mesoblast, and hypoblast.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held in Sheffield on March 20th, Dr. J. H. Willett (Liverpool), the President, being in the chair.—Dr. D. Dougal (Manchester) described a specimen of Allantoido-angiopagous Twins. One twin was a typical anencephalic monster, the other belonged to the rarer group of amorphous fœtuses. Both twins communicated with one another through the umbilical vessels near the edge of the common placenta.—Dr. H. Clifford (Manchester) showed a specimen and gave details of a case of Ectopic Pregnancy occurring in the stump three months after ovariotomy. In the meantime the other ovary, which at the first operation was apparently healthy, had become cystic, the combined swellings giving rather the impression of an ordinary pregnancy on examination without an anæsthetic.—Mr. Miles H. Phillips (Sheffield) reported a case of Double Ovarian Tumour, in which acute abdominal pain during the third week after an ovariotomy was due to torsion of the pedicle of a second ovarian cyst. The patient was 68 years old and very feeble. At the first operation a huge ovarian cyst, containing 30 pints of fluid, which had extended deeply into the left broad ligament, was removed with the uterus. The second cyst, measuring 5 by 4 by 4 inches, was not seen, apparently on account of its long pedicle, of over 5 inches, and the Trendelenburg position. The second operation was easy, and the patient made a good recovery.—Dr. Arnold W. W. Lea (Manchester) related a case of a patient with a large Ovarian Cystoma causing severe symptoms.—Mr. D. Gray Newton (Sheffield) showed a case of Ovarian Tumour accompanied by ascites and pleural effusion, clinically pointing to malignancy but pathologically proving a cysto-adenoma.—Dr. R. Favell (Sheffield) exhibited a large Fibromyoma of the Uterus undergoing sarcomatous transformation in parts. The patient was aged 47 years, and had noticed the swelling increase in size rapidly for 12 months.—Dr. W. E. Fothergill (Manchester) in Prolapse with Hypertrophy of the Cervix had adopted a further modification in the technique of anterior colporrhaphy combined with amputation of the cervix. Instead of removing a portion of the anterior vaginal wall as one piece and the cervix as a separate piece he now removed a triangular portion of the anterior vaginal wall together with the cervix in one piece. This method gave very neat immediate and very satisfactory remote results.—Mr. W. W. King (Sheffield) showed three specimens of Blighted Ova of a few weeks gestation which had been passed by three different patients shortly after the delivery of full-time children. He regarded them as examples of superfœtation, but he especially emphasised their medico-legal importance.

ULSTER MEDICAL SOCIETY.—A meeting of this society was held in the Anatomical Laboratory of the Queen's University of Belfast on March 26th, Mr. A. B. Mitchell, the President, being in the chair.—Professor J. Symington showed and explained the following exhibits: (1) A model of the Abdomen and Pelvis made by Miss Rea from a series of horizontal sections; (2) a series of specimens of Tubal Pregnancy; (3) a case of V-shaped Palate, with irregularity in the position of the incisors, cleft palate, defective nasal septum, and hypertrophied inferior and middle turbinals; (4) specimens to illustrate Differences between the Sternal and Axillary Borders of the Mammary Gland; (5) Cowper's Glands exposed *in situ;* (6) Accessory Sphincters of the Bladder; (7) series of sections of the Vagina.—Mr. P. T. Crymble exhibited: (1) Reconstruction of the Intestine and Urinary Bladder of a man aged 50 years; (2) reconstruction of the Stomach and Intestine of a girl, aged 20 years, showing visceroptosis; (3) horizontal sections of an Abdomen distended with Gas; (4) an Abdomen in which the jejuno-ileum, cæcum, and ascending colon possess a common mesentery; (5) Dilatation of the Colon, associated with a kink at the splenic flexure; (6) a Posterior Dissection of the Abdomen which exposes the anterior relations of the kidneys.—Dr. H. P. Malcolm showed: (1) Section through a Dislocated Shoulder; (2) Bilateral Fusion of the Inferior Turbinal with the Floor of the Nose; (3) specimen of Bilateral Accessory Renal Arteries.—Dr. R. J. McConnell exhibited: (1) Specimens illustrating the Anatomy of the Gall-bladder; (2) Dislocation of the Ulnar Nerve; (3) specimen of Retracted Nipple.—Dr. J. E. MacIlwaine showed a beautiful specimen of Auriculo-ventricular Bundle in a Bullock's Heart, demonstrated by injection of Indian ink, and he communicated a short paper showing a method of demonstrating the auriculo-ventricular bundle.—Mr. Crymble read a paper on Anatomical Factors in Abdominal Percussion.—Dr. Malcolm read a communication on the Topographical Anatomy of the Spleen.—Dr. McConnell read a short paper on the Anatomy of the Gall-bladder and Bile-ducts, and he also showed lantern slides of an Intussuscepted Appendix.

BIRMINGHAM AND MIDLAND HOSPITAL FOR WOMEN.—In their annual report the board of management state that the number of new out-patients last year was 4633, an increase of 160, and the total number of cases treated, new and old, was 21,502. In-patients numbered 1272, an increase of 167, and of the total number 152 were paying patients. The committee acknowledge with pleasure the success of the Gertrude Myers Home at Cleeve Prior. During the year over 100 patients had been admitted, the average stay being three weeks. No cost of management had fallen upon the hospital funds, its upkeep being provided entirely by patients and subscribers. The statement of accounts showed an adverse balance of £2525. At the Maternity Hospital 532 patients were admitted as compared with 537 the previous year. The need for accommodation for pupil midwives had arisen, and premises in Corporation-street had been taken and fitted up for 25 pupils at a cost of £1175.

Reviews and Notices of Books.

The Sensory and Motor Disorders of the Heart: their Nature and Treatment.

By ALEXANDER MORISON, M.D. Edin., F.R.C.P. Edin. Senior Physician to the Great Northern Hospital; Physician in Charge of Heart Cases to the Mount Vernon Hospital for Consumption and Diseases of the Chest. London: Baillière, Tindall, and Cox. 1914. Pp. 261. Price 7s. 6d.

THE title of the work now before us sufficiently indicates its contents, and Dr. Morison has succeeded is setting forth some interesting facts and suggestions as to the nature and treatment of sensory and motor disorders of the heart.

The more modern investigations in regard to diseases of heart have been largely based upon mechanical methods of examination, and much useful knowledge has thus been gained; also ideas on the nature of cardiac sensibility and motion have had to undergo considerable change, owing to the result of the researches which have been carried out on the anatomy and physiology of the heart. Dr. Morison states that the clinical methods he has chiefly employed are those of inspection, palpation, percussion, auscultation, and pathological investigation, but the graphic method has also been used to illustrate some points. He does not emphasise the value of the tracings obtained by the electrocardiograph. Dr. Morison considers at length the nervous mechanism of the heart and the share which it takes in relation to the sensibility and movement of the heart. In the chapter on the nerve control of cardiac action he gives an instructive account of the researches which have been made by various observers. He points out that there is no doubt that the heart contains within itself the mechanism and incentives to sinu-auriculo-ventricular action, and also remarks that it seems reasonable to believe that stimulus production in cardiac muscle may be provoked or checked by the nervous system, that the conduction of muscular movement from one part to another may also be influenced by it, and that the tone of muscle may certainly be augmented or depressed by the action of the nerves supplying the muscle.

The portion of the book devoted to the sensory disorders of the heart will be found to afford interesting reading. Dr. Morison's lectures on cardiac pain, which have already appeared in our columns, form the basis of his teaching. The observations on the clinical history of cardiac pain have evidently been carefully thought out, and are founded on practical considerations. The classifying the conditions which may bring about cardiac pain is by no means easy. The terms "false" and "true" convey little meaning, and the degrees of severity or fatality denoted by such words as "gravior" and "mitior" are not much more enlightening. But we do not think that the use of the terms "vaso-motor," "arterial," or "coronary" can be dismissed so easily. He suggests a classification which endeavours to give a local habitation and a name to phenomena which cannot yet be explained with scientific precision. Although this may be a step in the right direction, yet the plan which he has evolved is too elaborate, and it will be necessary to render it less cumbersome before it will be generally adopted. The diagnosis of cardiac pain is expressed in terms which are rather involved, and careful reading is required before the author's meaning can be perceived, when his reasoning is found to be sound.

In discussing the disorders of cardiac motion an elaborate classification is also adopted, scientifically correct perhaps, but too complicated for practical purposes.

The chapters on treatment are generally in accordance with modern views, and Dr. Morison ventures to hope that some mechanical impediments to the action of the heart which are beyond the power of the physician to deal with may, by the combined efforts of the physician and surgeon, be more successfully treated now and in the future than has hitherto been possible.

This book is an interesting study of cardiac disease, expressing not only the present state of knowledge on the subject, but also original views which are well worthy of consideration.

Psychanalysis, its Theories and Practical Application.

By A. A. BRILL, Ph.B., M.D., Chief of the Neurological Department of the Bronx Hospital, New York, &c. London and Philadelphia: W. B. Saunders Company. 1913. Pp. 337.

Dr. Brill's name is known to English psychiatrists as the translator of several of the more important works of Professor Sigmund Freud, of Vienna. He has now written a book the main object of which is to present the practical application of Freud's theories in one volume, in the hope thereby to remove certain erroneous conceptions about psychanalysis, and at the same time to stimulate interest in Freud's own contributions to the subject.

The book is written from a frankly Freudian standpoint, as is natural in one who has been instrumental in popularising Freud's doctrines, and it is more explanatory and expository than critical. Much of the material of the book is purely illustrative, and much is merely reminiscent of the teacher's views. There is throughout a tacit assumption that the reader is in sympathy with the author's interpretation of the phenomena of various cases and of his material as a whole, for little serious attempt has been made to persuade the critical reader of the correctness of the explanations. For instance, it is stated that the "almost universal" masturbation of infants serves "to prepare the genitals for their future function." Again, it is said there is no accidental forgetting, and that there is always a purpose in forgetting. The typical symptoms of neurasthenia are stated to be "headache, spinal irritation [whatever that may mean], and dyspepsia with flatulence, and constipation." These are always due to "somatic sexual injuries." Once more, "all great actions and accomplishments, heroic or commercial, are generally done for the purpose of pleasing some woman."

It is really impossible to take these and other of the author's generalisations seriously. Yet the book is full of them, so that if Dr. Brill meets with an unsympathetic reader we are afraid he is not likely to convince or even to impress. A book of this sort has a tendency to move in certain circles only. Those who can follow Freud's doctrines in their entirety will approve of the aptness of much of Dr. Brill's illustrations; those who are sceptical are likely to remain so. The book would not have been impoverished if one or two stories, intended to illuminate, had been omitted. As Dr. Brill holds

that "mistakes in printing" are due to direct or indirect association with something repressed, and illustrates the point by an allusion to the "wicked Bible" of 1631, it may be pointed out that there is a mistake in printing in the very passage in which he makes this reference.

Die Morphologie der Missbildungen des Menschen und der Tiere.

Herausgegeben von Dr. ERNST SCHWALBE, O.Ö. Professor der Patholog. Anatomie, Rostock. III. Theil, XV. Lieferung. 1. Abteilung, 5 und 6 Kapitel. *Die Missbildungen des Kopfes.* Mit 65 Abbildungen im Text. Jena: Gustav Fischer. 1913. Pp. 205–270. Price 5 marks.

UNDER the title of Malformations of the Head, dealt with in this part of what is now an extensive handbook, the following three groups of malformations are differentiated by E. Schwalbe and H. Josephy. All three groups are morphologically characterised as bilateral symmetrical malformations in which the median placed parts of the head either are wanting or at least are very imperfectly developed. I. Cyclopean and arrhinencephalous forms, in which the malformation affects the anterior parts of the brain, eyes, and nose. II. Otocephalous forms, in which the ear and mouth are malformed. The combination of the forms I. and II. is by no means rare. III. Triocephalous forms, a small group which has certain relations to II. The most striking visible character of the cyclops is that it has, or appears to have, only a single centrally placed eye, but its duplex constituent is usually readily distinguishable. It occurs at the root of the nose.

To Group I. about 40 pages are given. First, cyclopean characters in man and animals are described, then the morphological characters of the brain and eye are described, and illustrations given of cylopean forms in man, the goat, and pig. The "proboscis," the homologue of the nose—a double organ—is described and well illustrated. The absence of the rhinencephalus—a phenomenon described by Kendrat as arrhencephalic—is described, and the close relationship between this and the cyclopean form pointed out and illustrated. The causes of these two conditions are discussed as they occur in fishes, birds, and other animals. Otocephalic and tricocephalic forms are dealt with by H. Josephy in about 20 pages.

The part before us gives a compact descriptive account of the subjects with which it deals. The number, excellence, and variety of the illustrations will prove most useful even to those who do not wish to dip deeply into the descriptive text, which, however, is singularly clear and expressive.

Map Scheme of the Sensory Distribution of the Fifth Nerve (Trigeminus) with its Ganglia and Connections.

By L. HEMINGTON PEGLER, M.D. Edin., M.R.C.S. Eng., Senior Surgeon, Metropolitan Ear, Nose, and Throat Hospital, &c. Printed in 15 colours, and mounted on rollers for hanging up (size 4 × 5 feet), or folded in cloth cover (size 8½ × 11 inches). London: Baillière, Tindall, and Cox. Price 21*s.* net.

Dr. Pegler's map of the sensory distribution of the fifth, or trigeminal, nerve is very well done. There are no fewer than 315 named nerves and branches in the map, which is intended to aid the student in his work, both reading and dissection, on the complex trigeminal, and also to assist the clinician to understand the numerous referred pains or other symptoms which arise as a sequel to disease in such organs as, say, the nose, ears, eyes, or teeth. An immense amount of labour has been devoted to ensuring accuracy in the map, and professed anatomists and others have contributed to Dr. Pegler's scheme, so that it may be said to have the imprimatur of anatomist as well as of surgeon. There is a useful inset to the map containing a representation of the central connexions of the fifth nerve. Accompanying it is a booklet containing a series of analytical tables indispensable to the useful study of the map.

The map should at once take its place as a valuable addition to the teaching material of anatomical schools and medical and surgical clinics; its large size and its clear and distinctive printing enhance its usefulness.

Butterworth's Workmen's Compensation Cases.

Vol. VI. (New Series.) Edited by His Honour Judge RUEGG, K.C., and DOUGLAS KNOCKER, Esq. London: Butterworth and Co. 1913. Pp. 1193. Price 7*s.* 6*d.* net.

THIS annual issue gives full reports of the decision upon appeal of points of law arising under the Workmen's Compensation Act, and contains much that might upon occasions be found useful by medical men called upon to give evidence in arbitrations as to workmen's compensation, as well as by medical referees and others. It must be remembered, however, that it contains decisions of questions of law only, and that from reading reports of cases appealed upon medical men can only acquire a general knowledge of the points which are material to the establishment of a claim. Their evidence goes to prove the facts. The county court judge sitting as arbitrator comes to a decision as to the facts and applies the law, after which the Court of Appeal may be asked to decide whether he has rightly directed himself as to the law, and (as a general rule) whether there was evidence to support the award. Many of the cases under the Workmen's Compensation Act recorded in the present volume have already been referred to in THE LANCET, but of those of medical interest not thus commented upon may be noted Simpson *v.* Byrne, an Irish case, in which an arbitrator was held to be justified in terminating an award where a workgirl suffered from the wasting of the muscles of her arm, alleged to be due to an accident, but where medical evidence showed that her refusal to use her arm was the real cause of its condition. Another appeal heard in the Court of Session, Scotland (O'Neill *v.* John Brown & Co., Limited), arose out of the refusal of a workman in receipt of compensation to submit to the removal of the painful stumps of two toes. Two medical men advised that it would be useless for him to do so, and three recommended the operation, which the sheriff substitute found to be reasonably certain to effect its object, holding as the result of this that the workman's incapacity was due to his refusal and not to the accident. The court here again held that there was evidence to support the finding.

It must not be supposed that the rather alarming bulk of the volume under review (over 1000 pages) is due entirely to the elucidation of the law of workmen's compensation by courts of appeal. In it are now included cases under the National Insurance Act and others relating to general insurance other than marine. Under the former heading will be found recorded the learned judgments delivered by the Court of Appeal in Heard *v.* Pickthorne, the case in which an Approved Society

refused to accept from its members, for the purpose of sickness benefit, the certificates of medical men not upon the panel.

Die Chronischen Erkrankungen der Hinteren Harnröhre.

Von Dr. ERICH WOSSIDLO, Berlin. Mit 82 meist farbigen Abbildungen auf 19 Tafeln. Leipzig: Dr. Werner Klinkhardt. 1913. Pp. 155. Price, paper, 10 marks; bound, 11 marks.

THIS is a careful study of the affections of the posterior urethra. It is now fully recognised that the posterior urethra is sufficiently different from the anterior portion of the tube to justify a separate consideration as regards diagnosis, prognosis, and treatment.

In this work the author has described the anatomy of the part, the modes of investigation of the urine and other secretions concerned in the examination of this part of the urethra, the use of the endoscope and of other instruments. Then follow chapters on urethritis posterior in its various forms and of other diseases of the posterior urethra; then comes an account of the methods of operative manipulation; and, lastly, there are chapters on prostatitis and prostatic hypertrophy. The book is evidently the product of one well acquainted practically with the treatment of the diseases of the posterior urethra, and he has produced a work which should prove useful to those who wish to practise genito-urinary surgery. Not the least valuable part of the book is the series of coloured illustrations of the pathological and normal conditions described.

Controlled Natural Selection and Value Marking.

By J. C. MOTTRAM, M.B. Lond. London, New York Bombay, and Calcutta: Longmans, Green, and Co. 1914. Pp. vii.–130. Price 3*s.* 6*d.* net.

IN this volume Dr. Mottram propounds, but does not attempt to prove, a corollary to the theory of natural selection. He starts from the fact that when individuals are united into societies, those societies which are organised and differentiated in such a way as to have the advantage over competing societies will be likely to survive, and thus their advantageous methods of organisation or differentiation will be perpetuated. He then argues that individuals of different classes within each society have different values, and thus that any arrangement which ensures that the less valuable are killed rather than the more valuable will be of advantage to the society. It is under circumstances such as these that natural selection will be "controlled." The author claims that on his theory the origin of secondary sexual characters can be explained more easily than on the theory of sexual selection, which he regards as a weak spot in the Darwinian hypothesis. It cannot be said, however, that his explanation is of a very satisfactory kind. It may be stated briefly as follows. The female is more valuable than the male, because one male can fertilise many females; therefore the advantage that secondary sexual characters bring is that the male is sacrificed on behalf of the female. "Males and females are associated together during life, and especially during the breeding season, when the difference in colour is greatest and when their difference in value is highest. Therefore, according to the theory, the conspicuous colour of the male serves to control natural selection in such a way that the less valuable male will be killed in preference to the more valuable female." This sounds apparently reasonable enough, but the author regards the courtship display, or, as he prefers to call it, the "precopulatory display," of the male as evidence in favour of the correctness of his view. It is here that his explanation becomes very difficult to follow. Although we can conceive that it might be advantageous that the male rather than the female should be killed during copulation, it is hardly conceivable that an elaborate device for destroying the male just before copulation should, if effective, lead to anything but the extermination of the species.

Altogether it may be said that Dr. Mottram's reasoning about natural selection is unconvincing, because he starts from premises to many of which we cannot assent. For example, he asserts that a species completely fills and perfectly fits its environment; that "it is impossible to conceive of two species occupying the same environment, because we cannot conceive of two species, which being different in structure are yet similar in function," and that the colour of an animal if not protective must be purposely conspicuous, as it cannot be indifferent.

Die Wassermannsche Reaktion, mit besonderer Berücksichtigung ihrer klinischen Verwertbarkeit. (The Wassermann Reaction, with Special Reference to its Clinical Value.)

By Dr. HARALD BOAS, Privat-docent at the University of Copenhagen, &c. With a Preface by Professor WASSERMANN. Second enlarged and improved edition. Berlin: S. Karger. 1914. Pp. 242. Price, paper, 7.60 marks; bound, 8.80 marks.

THE Wassermann reaction has now become so firmly established as a method of clinical diagnosis that a separate monograph may fairly be devoted to a consideration of its technique and of the comparative value of the modifications introduced by subsequent experimenters. Dr. Harald Boas's work will therefore meet with a warm welcome from both clinicians and laboratory workers.

The first chapter is devoted to a historical retrospect of the discovery of the test, first set forth in a brief article by Wassermann, Neisser, and Bruck in 1906, and of the early criticisms and trials to which it was subjected before obtaining general acceptance. In the second chapter the technique is put out in detail, the preparation of the antigen, amboceptor, complement, and so forth being explained, as well as the method of performing the test and the necessary controls. Various modifications are also discussed, but Dr. Boas adheres very closely to the original procedure so far as his own recommendations go, though he prefers an alcoholic extract of human heart to the original extract of syphilitic organs in salt solution. The different precipitation reactions which have been used as substitutes for the Wassermann test are also discussed in detail. The third chapter deals with experiments which have been made to ascertain the presence or absence of the reaction in diseases other than syphilis, from which it appears that the test may be positive in a certain percentage of cases of scarlet fever, but that this is a transitory phenomenon and of little practical importance. The reaction may also be positive in febrile malaria, in nodular leprosy, in frambœsia, and in patients who have recently had an anæsthetic. Such exceptions to the rule that a positive Wassermann reaction indicates syphilitic infection

are of little weight. In syphilis itself the reaction may not appear until just before the roseolar eruption, so that a negative result in patients suffering from a chancre is of no value in excluding syphilis. In the secondary stage the reaction is constant in the serum if the patient has not been treated for the disease, but the cerebro-spinal fluid does not generally exhibit it apart from involvement of the nervous system. In tertiary syphilis the reaction is constantly present in the serum if the patients have not been treated with specific remedies, and in cases of disease of the central nervous system the cerebro-spinal fluid may give a positive reaction, but does not always do so. In untreated cases of tabes dorsalis the reaction is constantly present in the serum, less constantly in the cerebro-spinal fluid, while in dementia paralytica the serum constantly reacts positively, and the cerebro-spinal fluid also, in over 90 per cent. of cases. On the other hand, the test is of little value for the recognition of congenital infection. The relationship of the phenomenon to specific treatment by mercury and salvarsan is somewhat complicated, for the reaction may disappear as a result of such procedures, or if previously absent or weak may become positive or more marked, the appearance of a positive reaction after a dose of salvarsan being analogous to the exanthem which sometimes follows this procedure. Other points noted are that a positive reaction persisting after treatment threatens a relapse, and that so long as the test remains positive the patient must be regarded as syphilitic. An exhaustive bibliography extends over 80 pages.

The book constitutes an excellent and authoritative account of the important phenomenon with which it deals, and deserves careful study by all who are called on to carry out the procedure in the laboratory or to estimate the clinical importance of its presence or absence as bearing on the vital problems of diagnosis and prognosis.

A Text-book on Gonorrhœa and its Complications.

By Dr. GEORGES LUYS, late Assistant to the Urological Clinic, Hôpital Lariboisière, Paris; Prizeman of the Faculté de Médecine, Paris. Translated and edited by ARTHUR FOERSTER, M.R.C.S. Eng., L.R.C.P. Lond., late Resident Medical Officer, London Lock Hospital. With 200 illustrations and 3 coloured plates. London: Baillière, Tindall, and Cox. 1913. Pp. 384. Price 15*s.* net.

THE times have changed greatly since all that was known about gonorrhœa was contained in a few pages of the ordinary text-books of surgery. Then this disease was regarded as little more than a local affection of the urethra, occasionally giving rise to a troublesome form of rheumatism or a severe conjunctivitis. Now we look upon the urethritis as probably the least important of the manifestations due to the gonococcus, for we have recognised that this micro-organism is responsible for many much more serious diseases. The fact that a large volume like that before us, containing nearly 400 pages, has been written dealing only with gonorrhœa and its complications is surely adequate proof that this disease is being estimated at its real value. Especially important is the fact that the gonococcus is the cause of many of those conditions in women which cause sterility and chronic invalidism.

It is impossible to overrate the importance of early and thorough treatment of gonorrhœa, and therefore medical men have need for more instruction in this matter than is contained in the ordinary works on surgery. They cannot have a more suitable book than this, which contains a very full and satisfactory account of the disease in its various manifestations. It describes the treatment that should be adopted and mentions the precautions that are necessary. The author is well qualified to speak on this subject, and he has succeeded in writing a book which should prove of great service to those who have to treat this protean disease. The translation has been excellently done, and the additional notes which have been made by the translator are apposite and judicious.

The Practice of Urology; a Surgical Treatise on Genito-urinary Disease, including Syphilis.

By CHARLES H. CHETWOOD, M.D., LL.D., Professor of Genito-urinary Surgery, New York Polyclinic. Illustrated. London: Baillière, Tindall, and Cox. 1913. Pp. 816. Price 21*s.* net.

THE increasing number of works devoted to the surgery of the genito-urinary system is a clear indication of the broadening of the interest taken in this group of diseases. The establishment of genito-urinary clinics has also done much to draw the attention of the student and the practitioner to the subject, though up to the present in this country few of these special clinics exist.

Dr. Chetwood has succeeded in putting before the medical public in the present work a very readable treatise on this important branch of surgery, though the title does not accurately describe the contents of the volume; for, in the first place, it contains several subjects which are not correctly included under the name of urology, though doubtlessly they are always treated by "urogenital surgeons"; and in the second place, no reference is made to the diseases of the urinary apparatus of the female, though so far as the title goes these should be included. However, this is more a question of name than of anything else, and in many cases urological surgical practice is confined to the male sex.

The book is well written, the descriptions are clear, and much attention is paid to the anatomy of the parts dealt with. The illustrations are numerous, there are more than 300 of them, and in addition a number of excellent coloured plates. The figures are good, and many of them are original; we may mention that Fig. 248 appears to be inverted. The book should have a wide popularity, for it contains all that a student will need, and yet it is not burdened by superfluous verbiage.

The Psychoneuroses and their Treatment by Psychotherapy.

By Professor J. DEJERINE, Professor of the Clinic for Nervous Diseases of the Faculty of Medicine of the University of Paris; and Dr. E. GAUCKLER, formerly Interne of the Hospitals of Paris. Authorised translation by SMITH ELY JELLIFFE, M.D., Ph.D., Adjunct Professor of Diseases of the Mind and Nervous System, Post-graduate School and Hospital, New York. London and Philadelphia: J. B. Lippincott Company. 1913. Pp. 395. Price 18*s.* net.

THOSE who are unfamiliar with the original of the book under review may readily appreciate the general position of its authors as regards psychotherapy by some words used by the translator in his introduction. The fundamental postulate of Dubois's well-known work on the psychoneuroses is an appeal to the intelligence of the individual. It

is conceded, nevertheless, even by his most ardent supporters, that he has not laid sufficient emphasis upon the instinctive, or, more widely speaking, the emotional, side of the human machine in its psychical situations. In this book of Professor Dejerine and Dr. Gauckler is found just that emphasis lacking in the work of Dubois. The translator is amply justified in saying that their book provides us, in the best manner at present available, with that side of the human being not a little neglected by other authors. Professor Dejerine considers that psychotherapy depends wholly and exclusively upon the beneficial influence of one person on another. If he is to effect any result, the physician must be to his neurotic patient *un peu un ami*. In these words is the kernel of the authors' teaching.

No one who reads the book can fail to recognise how many neuropathic and psychopathic patients can be treated and cured without these more elaborate and detailed psycho-analyses of which so much is heard nowadays. Reasoning by itself is insufficient, but let the appeal be tinged with an emotional or personal element and its momentum at once is augmented and its curative value enhanced. The book consists of three parts—the first, which is analytical, is devoted to the study of functional manifestations; the second is concerned with a synthetic study of the mechanism of the psychoneuroses; the third part is therapeutic.

The practitioner may well be confused, if not overwhelmed, at the thought of the present-day output of psychotherapeutic literature, but if he is in doubt what to read and what to ignore let him not hesitate over the work of Professor Dejerine and Dr. Gauckler; we are confident he will at once find himself in sympathy with its point of view and soon prove its worth in his clinical experience.

Lehrbuch der Orthopaedie.

By Dr. VON ABERLE, Vienna; Dr. BADE, Hanover; Dr. VON BAEYER, Munich; Professor BIESALSKI, Berlin; Dr. GAUGELE, Zwickau; Professor LANGE, Munich; Professor LUDLOFF, Breslau; Dr. PREISER, Hamburg; Professor RIEDINGER, Würzburg; Dr. ROSENFELD, Nürnberg; and Professor SPITZY, Vienna. Edited by Professor LANGE. Jena: Gustav Fischer. 1914. Pp. 790, with 586 illustrations. Price 18 marks.

IN his introduction Professor Lange claims that the advances in orthopædics in the eight years that have elapsed since the publication of the last edition of Hoffa's text-book justify the compilation of a new volume. But quite apart from this the present volume justifies itself. Orthopædics, being very largely a matter of mechanics, lends itself to endless variations of method, works dealing with it are almost necessarily personal, and each such personal description must be of value to others. Professor Lange's own section of the book, dealing with the history of orthopædics, the cause of deformities, diagnosis, methods of treatment, the use of bandages, plaster, apparatus, massage, gymnastics and physical methods, &c., is for this reason the most interesting of the several articles, and may be recommended to all those engaged in this specialty.

Some space is devoted to statistics of deformities taken from the census of cripples in Germany organised by Biesalski in 1907, from Rosenfeld's Bavarian statistics, and from the clinics of the various authors. These show that in Germany, as in England, a large proportion of cripples are affected with tuberculous disease of the bones or joints, and that the next important cause of crippling is infantile paralysis. But the third cause comes somewhat as a surprise; it is scoliosis which appears to be far more frequent, at least in its more severe forms, in Germany than in this country.

Malformations, disturbances of growth, and processes of softening of the bones are dealt with by Professor Riedinger in an article full of valuable information, the section on rickets being especially good. Professor Ludloff on inflammatory diseases is less satisfactory; too much is attempted in the space available, and the result would have been better if more attention had been devoted to details of diagnosis and treatment of the tuberculous affections. Dr. Gaugele's account of congenital dislocation of the hip is most admirable and complete, and with one reservation the same may be said of Professor Biesalski's long section on diseases of the nervous system. Spastic paralyses obtain very full recognition, the newer methods of Förster, Stoffel, and Spitzy all receiving description; but of anterior poliomyelitis a much less complete account it given, and the methods of treatment of the paralysis in the early stage, the most important methods of all, are passed over very briefly.

Professor Spitzy writes on deformities of the spine, on the whole a full and up-to-date account. It is unfortunate that the term *habituelle Scoliose* should be used in Germany to mean what we should call static scoliosis, and to include both postural and fixed curves, and that by *statische Scoliose* should be indicated a scoliosis due to tilting of the pelvis. But these are differences of international nomenclature which it is difficult to remedy. Professor Spitzy's illustrations of Abbott's method of treatment scarcely give a real representation of the technique. The remaining articles are by Dr. v. Baeyer, on spondylitis; Dr. Rosenfeld, on deformities of the upper extremity; Dr. Bade, on deformities of the lower extremity; and the late Dr. Preiser, on deformities of the feet.

Handbuch der Vergleichenden Physiologie.

Bearbeitet von HANS WINTERSTEIN in Rostock. 39. Lieferung. Band III., Physiologie der Atmung. Zweite Hälfte. Seiten 641–756. Band IV.: Physiologie der Reizaufnahme. Seiten 977–997. Schluss, Titel, und Inhaltsverzeichniss. 1913. 40. Lieferung. Band III.: Physiologie des Energiewechsels. Zweite Hälfte. Seiten 787–946. Jena: Gustav Fischer. 1914. Price 5 marks each Lieferung.

IT is at times rather difficult to follow the arrangement on which the several parts of this work are issued. For example, in the part No. 39 before us we have the index and list of contents of Vol. IV., pp. 977–997, while the text itself deals with the Physiology of Respiration, by E. Babák, of Prague. The subject of respiration in fishes is continued and fully dealt with, as well as the respiratory processes in the embryo, including what is called the provisional respiratory mechanisms, and respiration in those fishes which produce their young alive—i.e., viviparous fishes. The special respiratory arrangements and their mechanisms in elasmobranchs, teleosteans, and dipnoi are then treated in detail. In the "literature" over 200 references are quoted.

The remainder of the text, about 50 pages, is devoted to respiration of the amphibians. After a general introduction the methods of investigation are described, then the means for the renewal of the respiratory medium on the respiratory surfaces — gills or skin, as the case may be. Attention is directed to the importance of the movements of the buccal and pharyngeal cavities. The ventilation of the lungs

in urodela and anura is fully expounded, but to follow the exposition the reader must have an intimate knowledge of the anatomy of the muscular apparatus of the mechanism itself. The nervous mechanisms and their actions are then considered, and the text finishes with an account of the relation of the brain and spinal cord to the respiratory movements. This part will prove a valuable source of reference for students of the comparative physiology of respiration.

In No. 40 E. Godlewski, of Cracow, continues his review of the physiology of reproduction. Beginning with the question of in-breeding, the author next considers the processes that accompany impregnation and their morphological course. First the morphological changes are set forth in detail and illustrated by a large number of figures, especially from the classical observations on echinoderms and certain sea worms. The observations of Loeb on artificial parthenogenesis are described, as are the methods of producing artificial parthenogenesis employed by Delage, Shearer, and Lloyd.

The hypotheses of these several authors are stated and criticised, and the author comes to the conclusion that so far as the echinoderms are concerned, the theory of Loeb is the only one that unifies the results obtained and appears to be well based on facts. The results observed in worms, molluscs, insects, and vertebrates are then considered. The next subject dealt with is crossing and heterogeneous impregnation. Then follows an account of the action of frog's sperm exposed to radium in the development of the frog's egg. Polyspermia, which was first discovered in the selachians, but which occurs in many other animals, is next considered. It can also be produced artificially, according to O. and R. Hertwig. The consideration of the large and complex subject of heredity is then begun. First the significance of the different characters of living matter is considered. The results of chemical factors on the germ plasma are illustrated by the effects of alcohol in guinea-pigs, as shown by Ch. Stockard and D. M. Craig. Changes of cutaneous pigmentation as an acquired property are described as they occur in salamandra maculata, and this part closes with the author's account of heredity in the vegetable kingdom, which will be continued in a subsequent part.

New Inventions.

AN IMPROVED APPARATUS FOR THE INDUCTION OF ARTIFICIAL PNEUMOTHORAX.

GENERALLY speaking, the apparatus for the induction of pneumothorax is cumbrous, but I have tried to design one which shall be portable and handy.

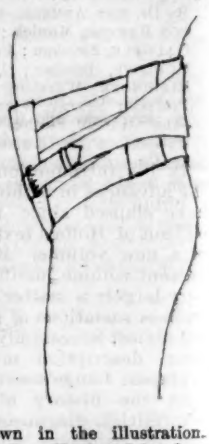
My manometer is a U-shaped glass tube which is held by aluminium clips to the inside of the door of a box. This door is entirely covered with thick felt, which serves to protect the manometer from jars and also makes the box practically air-tight. The felt is red, and the water in the manometer is coloured blue with Fehling's solution. In the back right-hand corner of the box are two pieces of wood cut to receive a graduated glass cylinder containing nitrogen, held in place by two leather straps. At the opposite corner, an inch from the door, is a vertical brass rod, on which slides, like a ring of a retort-stand, the stage for the water-bottle, which is connected with the graduated cylinder by a double syphon. Rising from the back of the stage is an upright holding the bottle by two straps, so that it cannot be upset. When the apparatus is out of use the stage with the bottle is inside the box, in contact with the left side of it, and secured to it by a third strap. The apparatus therefore requires no packing when it is carried about, except that it is well to wrap a mass of crumpled tissue-paper loosely round the gas-filters to prevent them from knocking against each other or the manometer. But the manometer, lying flat on the door of the box, is much less liable to injury than when (as in the form of apparatus commonly used) it is held in wooden supports which keep it about half an inch away from the door. When using the apparatus it is only necessary to unfasten the third strap, then the stage, with the bottle attached to it, can be made to swing round, coming entirely outside the box, so that, when necessary, the bottle can be raised until its bottom is higher than the top of the graduated cylinder. In my apparatus, not intended for hospital work, the graduated cylinder is of 500 c.c. capacity, instead of 1000 as is customary. The water-bottle is of corresponding size, and this makes the apparatus more handy and portable. The needle which I use is Saugman's, with a modification which is, I think, of practical importance. When there is reason to suppose that the lumen of the needle is obstructed with blood the stylet may be used to clean it. But with an ordinary Saugman's needle this involves some risk, because when the tap is opened to admit the stylet communication is made with the external air. In the needle made for me by Messrs. Allen and Hanbury this risk is entirely obviated. As in Potain's aspirator, the stylet passes through an air-tight stuffing-box, but in my modification it is made to screw in with an indiarubber washer.

Messrs. Brady and Martin, of Newcastle-on-Tyne, are prepared to supply apparatus made on my design.

Newcastle-on-Tyne. FREDERIC C. COLEY, M.D. Durh.

A NEW ABDOMINAL BELT FOR MEN.

THE "Isomar" surgical belt is a new abdominal support for men for use in cases where such support is desirable. The front of the belt is made of stout or fine drill, or for those who suffer with heat of cellular material, and is stiffened by three pairs of narrow vertical whalebones. It is designed to follow the direction of the fibres of the rectus abdominis muscle, while the sides, which are formed of several overlapping layers of broad elastic, follow the direction of those of the external oblique. The back is curved slightly into the waist, thus admitting of some spring above and below. Attached to the lower part of the inner surface of the belt in front is a metal plate consisting of two triangular sections with rounded corners, jointed vertically down the middle. The plate is padded with rubber to give it the necessary spring, and the whole is protected with chamois leather. This pad is most useful in cases of enteroptosis, weak abdominal walls after operation, and especially when there is a hernia, since by pressing the internal organs upwards and backwards it relieves the hernia from the downward pressure upon it. It is held firmly in place between the iliac crests and the umbilicus and pubic arch by the cinch formed of the broad but tapering bands extending from the ends of the belt on either side. One of these bands passes through the other and the ends are brought round to the front, reversed through a double cinch in front of the bottom of the pad on each side, and buckled, as shown in the illustration. There are no laces or retaining bands. The broad bandage grips the pelvis firmly and gives a decided feeling of comfort and support. The usual fault of such belts is either that they tend to ride upwards unless strapped down in some way, or that they fail to adapt themselves to the changing posture of the wearer. Having this point in mind we have had this belt practically tested for several days, and we are able to state that it fits comfortably, gives a strong feeling of support, causes no constriction anywhere, adjusts itself easily to the various movements of the body, and does not ride up, but maintains the position in which it was put on.



It is manufactured by Messrs. Morison and Stephens, 26, South Molton-street, London, W.

THE LANCET.

LONDON: SATURDAY, APRIL 11, 1914.

Uterine Hæmorrhage.

THE subject of uterine hæmorrhage is one of great interest and importance. We are not acquainted with the exact nature or meaning of menstruation and we are still ignorant to a large extent of the factors which initiate and control it, facts which render any addition to our knowledge of this function a distinct gain. Mr. H. BECKWITH WHITEHOUSE is to be congratulated on having made this problem the subject of his Hunterian Lecture, which was published in full in THE LANCET[1]; he has certainly added something to our knowledge both of the physiology and pathology of hæmorrhage from the uterus. It is only of recent years that the exact relation of menstruation to the changes associated with the phenomenon of rut in the lower animals has been determined, though the researches of HEAPE and others have shown that menstruation may be regarded as analogous to the prœstrum of the primates, which reaches its highest stage of development in the human female.

A question which has always excited attention is the cause of the non-coagulability of the menstrual blood. This has been attributed on the one hand to the absence from it of fibrinogen and of fibrin, and on the other hand to its containing an excess of antithrombin. Mr. WHITEHOUSE points out that in a considerable number of women clots actually are passed, but as a general rule the menstrual blood does not clot. He, however, produces evidence to show that the menstrual blood does clot in the uterus when the endometrium is healthy, and attributes its fluid character in the vagina to the fact that in this canal the clot is dissolved by a fibrinolytic enzyme or similar substance which has the power of digesting fibrin and breaking down blood clot. His experiments certainly seem to show that there is a specific fibrinolysin in the fluid portion of the menstrual blood, and that it acts in a quantitive manner, since it will not produce the resolution of an unlimited amount of thrombus. He has further shown that this property is not due to any of the normal constituents of the menstrual blood, such as mucin, calcium salts, lactic or butyric acids. This thrombolysin is believed to be a product of the glands of the body of the uterus, and is poured out by them into the cavity of the uterus, more especially at the time of menstruation. Experiments have shown that both the tissues of the endometrium and the menstrual blood have the property of diminishing the coagulation period of normal blood. This power is attributed to the presence in them of a considerable amount of a substance called thrombokinase. In the normal coagulation of the blood thrombokinase, which is present in varying amount in the tissues, promotes the union of the thrombogen and calcium salts of the blood plasma and produces thrombin, and this in its turn acting upon the fibrinogen converts it into fibrin. Any excess of thrombin is inactivated by a hypothetical body termed antithrombin, and the presence of this body in excess, as we have seen, is one of the reasons assigned for the failure of the menstrual blood to clot. The power of the stroma cells of the endometrium to produce thrombokinase is regarded as a provision of nature to facilitate clotting and to prevent hæmorrhage. The fact that even in well-marked cases of hæmophilia hæmorrhage very rarely occurs during menstruation is regarded as a clinical argument in favour of these views.

What is the machinery which controls normal menstrual hæmorrhage? Mr. WHITEHOUSE suggests that three factors may be concerned, the effect of uterine contractions, the action of a hormone or hormones producing capillary dilatation in utero, and the biochemical function of the endometrium. The experiments of C. J. BOND and some undertaken by the lecturer seem to show that the uterine secretion, in rabbits at any rate, is under the control of the ovaries both in regard to its amount and physiological action, and further suggest that the secretion of the uterus, stimulated and controlled by an ovarian hormone, is partly absorbed and produces the dilatation of the vessels which is characteristic of the late stages of the prœstrum. If we accept these views, the presence of clots in menstrual blood may be due to a deficiency of thrombolysin in the uterine secretion, or occur because the amount of blood is too large or its escape too rapid for the thrombolysin to act. That the normal balance between the thrombotic and thrombolytic properties of the endometrium is easily upset is shown by the fact that some 50 per cent. of all women pass clots from time to time. If now, in the light of these observations, we consider the causes of excessive pathological bleeding from the uterus of endometrial origin, obviously it may be due to diminished power of the secretion to produce clotting of the blood or an excessive secretion from the uterine glands producing marked resolution of the clots. A clinical example of the latter would be the excessive hæmorrhage often met with in glandular hypertrophy of the endometrium. The fact that uterine hæmorrhage is not infrequently accompanied by some hypertrophy of the ovaries is well known to all gynæcologists. If this is associated with an increased internal secretion from the ovary and also from the uterine glands, which in its turn is absorbed and produces vaso-dilatation in the uterus, then one method of arresting uterine hæmorrhage would appear to be reducing the ovarian secretion.

[1] THE LANCET, March 28th, p. 877, and April 4th, p. 961.

The functional hæmorrhage of puberty Mr. WHITEHOUSE seeks to explain by excessive action of the hormones with maldevelopment of the endometrium and therefore delayed coagulation, while the functional hæmorrhage of the menopause is said to be due to a disturbance of the normal balance in that the ovarian secretion is still producing its vaso-dilator effects at a time when the endometrium has undergone atrophy and the musculature of the uterus fibrosis.

In considering the incidence of excessive uterine hæmorrhage in relation to organic disease of the internal sexual organs attention is called to the fact that uterine displacements cannot be regarded as a cause of excessive bleeding. Of late years the condition termed fibrosis of the uterus and chronic metritis has taken a prominent place among the factors supposed to produce severe uterine bleeding. The work which has recently been published upon this subject by BRIGGS and HENDRY would seem to prove that it is extremely doubtful if there is any causal relationship at all between the condition of so-called fibrosis uteri and severe hæmorrhage. We need not follow the lecturer in his analysis of the relation between various pelvic diseases and uterine hæmorrhage, since the conclusions he comes to are identical in the main with those of most other observers. At the same time we think that until there is more certain evidence of the exact relationship of the ovaries to hæmorrhage from the uterus his recommendation of partial oöphorectomy when bleeding, the result of excessive thrombolysis associated with hypertrophy of the endometrium, is not relieved by curettage requires very careful consideration. There is much in the lecture to interest everyone, and if the views put forward are confirmed by other observers they will do much towards placing our treatment of these conditions upon a more certain and scientific basis.

A New History of Medicine.[1]

"WHETHER I am likely to perform a task worth the trouble in writing a history of the Roman people from the very beginnings of the city I do not know, nor if I did would I venture to say. ..... The subject is one of unbounded labour, for it goes back more than 700 years, and having started from very small beginnings has grown to such magnitude that it begins to weary from its very greatness." In these words one of the greatest of historians began his chronicle of the deeds of the Roman people, and the words may well serve as a motto for any historian of to-day. The doubts expressed by LIVY in his opening sentence have not been endorsed by the countless readers of his history, but everyone who writes history to-day, and who aims at making his record comprehensive and authoritative, whether the subject be world-wide, national, or periodic, must feel a similar doubt. The historian of medicine is placed in as anxious a position as that to which LIVY calls attention. The first beginnings of medicine seem trivial and even childish, and the subject, instead of going back only 700 years, reaches back for something like 3000 years, or even further. The history of nations and peoples deals with the relations of one towards another, with wide questions of economics, politics, tribal migrations, the arts, the sciences, wars, and incidentally with epidemics, such as the Black Death. But the history of medicine looked at from one point of view is primarily only concerned with the two great problems affecting humanity—namely, birth and death—although these two connote innumerable others. For it is nowadays almost a commonplace to observe that medicine has to deal not with bodies alone, but with men and women whose psychical and physical sides are inextricably bound up one with the other. As PLATO said long ago: "Just as you ought not to attempt to cure the eyes without the head, or the head without the eyes, so neither ought you to attempt to cure the body without the soul."

The history of medicine is indeed to a great extent the history of human thought, and involves the consideration of primitive religion and the dawn of natural philosophy, the problems of agriculture and the discovery of plants good for food and the reverse, and institution of efforts to avert epidemics. When we add to these and other allied topics the great and mainly unsolved problem of how the human body works, of its defensive mechanism against disease organisms, of the life history of these organisms themselves, of the influence on the body of climate, environment, and employment, we may well say that "the subject from very small beginnings has grown to such magnitude that it begins to weary from its very greatness," and it is becoming obvious that the history of medicine will have soon to be treated after the fashion of the Cambridge Histories—that is to say, in periods by specialists. Nevertheless, a handbook dealing with the matter as a whole is still a necessity for the commencement of the study, and such a handbook now lies before us in the shape of an admirable "Introduction to the History of Medicine," by Dr. FIELDING H. GARRISON, the principal assistant librarian of the Surgeon-General's Office, Washington, D.C. A careful study of Dr. GARRISON'S book warrants us in saying that it is the best general history of medicine at present to be found in the English tongue, and we say this in no disparagement of Dr. WITHINGTON'S admirable "History of Medicine from the Earliest Times," for the latter appeared as long ago as 1894, and did not pretend to deal with modern medicine after the time of BICHAT.

Dr. GARRISON commences with a survey of Egyptian, Sumerian, and Oriental medicine; then he passes to Greek medicine, divided into three stages—the pre-Hippocratic, the classic from 460 to 146 B.C., and the Græco-Roman period

[1] An Introduction to the History of Medicine, with Medical Chronology, Bibliographic Data, and Test Questions. By Fielding H. Garrison, A.B., M.D., Principal Assistant Librarian, Surgeon-General's Office, Washington, D.C. London and Philadelphia: W. B. Saunders Company. 1914. Pp. 763. Price 25s. net.

(146 B.C. to 476 A.D.); then the Byzantine to 732 A.D.; next come the Mohammedan and Jewish periods to 1096 A.D., the mediæval period to 1438 A.D., and the Renaissance and Reformation period to 1600 A.D. The chapters which follow deal with the seventeenth, eighteenth, nineteenth, and twentieth centuries as periods in themselves. One valuable, and we think new, feature of Dr. GARRISON'S book is the sketch at the end of each period of the cultural and social aspects of medicine during that period; there are in addition two most valuable appendices dealing with medical chronology and medical bibliography respectively. The work is crammed with dates and bibliographical references, and the latter we are glad to see are very fully given, a point which is frequently overlooked. But Dr. GARRISON being a librarian is naturally only too well acquainted with the slovenly manner in which references are often given, and has spared no pains to make his own accurate and easy to find. In a work of this size, which deals with so long a period and with so many dates, it is inevitable that there should be slips. Despite those which we have observed we have no hesitation in saying that Dr. GARRISON has given to the medical profession, and especially to those members of it who wish to study the history of their craft, a most valuable and informing work, and we have nothing but congratulations to offer him on the way in which he has accomplished the task he has set himself.

Annotations.

"Ne quid nimis."

THEOLOGY FOR MEDICAL MEN.

A FEW centuries ago the principal lights of the medical profession were clerics. With the recent growth of psychological science, and especially with its excursus into the fields of therapy, has grown up a rather voluminous literature from the theological side to re-establish the claims of religious belief and practice as at least a very powerful auxiliary in the healing certainly of the mind, and to a great extent of the body also. But a further indication of the *rapprochement* between the two professions of theology and medicine, which in the latter half of the nineteenth century, and even further back, were becoming more and more estranged, is to be found in the recent appearance of two distinctly theological works from the pens of medical men. The first bears the somewhat cryptic title, "The Interregnum."[1] It consists of 12 essays on religious doubt. By the interregnum the author explains that he means that stage in a man's mental development when the old beliefs and sanctions of childhood are lost and he has not yet had time to form new views of his own. This period is characterised by diffidence, for, as the author explains in the introduction, the unsettled one finds experts disagreeing and feels himself incompetent to decide, and is naturally chary of allowing himself to be persuaded by any elaborate argument, feeling that there may be another side of the argument which he has not yet heard. The object of the author is first to show that it is a natural, right, reasonable, and desirable thing for one who would follow the good to associate sympathetically with Christians as a Christian during the interregnum, even when the balance of evidence may seem to him against Christianity; and secondly, not to prove the truth of Christianity, but to show that the case has not been finally closed against it by any of the rival systems in vogue. How far the author is successful in attaining either of his objects obviously must be settled by each individual reader for himself; suffice it to say that the argument is clearly presented and shows it to be the work of one who has made theology a systematic study, and who has from his medical training an adequate knowledge of the tangential points of both medical and theological science. The other book, "Forgiveness and Suffering,"[2] is a careful consideration of the current interpretations of the Christian doctrine of the Atonement and the problem caused by the presence of pain and evil in a world asserted to be created and controlled by a beneficent yet omnipotent and omniscient Being. In this case also the author, Dr. Douglas White, in virtue of his medical training, is apt to detect where the shoe of Christian dogma pinches the foot of scientific data. It would be out of place in THE LANCET to discuss the theology presented in either of these books. We can, however, conscientiously applaud such obviously sincere attempts on the part of excellently equipped members of the medical profession to extend a hand to earnest doubters struggling in the slough of despond. To those who have finally adopted a mechanistic conception of life, and indeed to all but theists, the books make no pretence of appealing.

[1] The Interregnum. By R. A. P. Hill, B.A., M.D. Camb. Cambridge: At the University Press. 1913. Pp. 150. Price 4s. 6d. net.

[2] Forgiveness and Suffering: A Study of Christian Belief. By Douglas White, M.D., Trinity College, Cambridge. Cambridge: At the University Press. 1913. Pp. 133. Price 3s. net.

EMPIRICAL REMEDIES.

WE publish this week an article on the therapeutic value of the potato, recognising that it is a contribution which differs in some ways from those generally published in THE LANCET. The personal experience of one man with a new therapeutic measure, unless reinforced by scientific reasoning, requires, we consider, more support than the statement that it has succeeded in a certain number of cases. Where the investigator is not a qualified medical man there can be no doubt that no account of a new treatment should be published until it has been fully tested by medical men; and where the suggested treatment is obviously at variance with known physiological or accepted medical doctrine the medical profession is right not to waste time in experimenting. This attitude is, of course, called narrow-minded or short-sighted by the charlatan and by a good number of people who ought to know better, but it is one from which we could never depart in the case of unqualified people. The idea of the treatment may be good, but it must be vouched for by trained intelligence, or a delay most inimical to the interests of the patient might be incurred by valueless trials. But where a medical man invites medical coöperation by asserting that over a considerable period of time he has tried particular therapeutic measures in particular pathological

conditions, and has obtained successes to which he wishes to draw the attention of his brother practitioners, the matter is different. Hence the appearance in our columns of Mr. Howard's plea for potato juice in the form of a dressing and liniment in various common and painful conditions. The circumstances in which he recommends the drug are, it will be seen, not those where any serious harm could result to the patient if a certain amount of time in the early stages of the condition were employed in experiment, while a year ago reference was made in these columns to the statements concerning the anodyne and sedative properties of the potato. It will be seen, also, that many of the cases which he quotes are of exactly the kind where the symptoms spontaneously abate, making it difficult for the observer to see how much is due to the remedy and how much is due to nature.

RECURRENCE OF DUODENAL ULCER AFTER OPERATION.

IN the *Boston Medical and Surgical Journal* of Jan. 29th Dr. William J. Mayo has published an important paper on recurrence of ulcer of the duodenum after operation. Gastro-jejunostomy was the method of choice in the majority of his cases. The greater the obstruction, within limits, the better were the results. The converse also held true: cases with slight or no obstruction gave the highest number of failures. Dr. Mayo divides the failures into two groups. In the first the operation does not relieve the stomach of its acid irritating secretions, and the ulcer is inadequately protected during the healing period. This occurs most frequently in cases of no or slight obstruction. The pylorus is open, and much of the food passes through it instead of through the gastro-jejunostomy. In such cases attempts have been made to close the pylorus by infolding with buried silk sutures, but the general experience is that permanent blockage is not produced, and the sutures are eventually passed into the lumen of the stomach with restoration of the channel. For some time a method devised in Germany has been practised at the Mayo clinic. A strip is cut from the gastro-hepatic or gastro-colic omentum, left attached at one end, and drawn twice about the stomach just above the pylorus or, if the ulcer is sufficiently far from the pylorus, the strip is passed about the duodenum above the ulcer. The site of blocking is diminished in size by the application of several interrupted sutures of fine silk to take the strain during healing. As far as can be ascertained the blockage has remained permanent since this procedure has been followed, but sufficient time has not elapsed to show its exact value. However, it is certain that living tissue drawn about the pylorus is more permanent than devices in which foreign bodies, such as thread, are used. In one case a patient was re-operated on after a year, and a strip of living tissue was found in place and covered with adhesions and the pylorus securely blocked. Another method, adopted by von Eiselsberg, is to divide the pyloric end of the stomach and close both ends, but it has a definite, though small, mortality. In duodenal ulcer without obstruction, when the conditions are favourable, Dr. Mayo excises the ulcer. In his early cases he excised the ulcer alone, but a considerable number relapsed within a year. He therefore found some drainage operation, either gastro-jejunostomy or a plastic operation on the pylorus, necessary. Following this, if the pyloric obstruction is slight the ulcer is infolded, as suggested by Sir Berkeley Moynihan, and the pylorus is blocked by living tissue. If the obstruction is marked only gastro-jejunostomy is necessary, though infolding of the ulcer is advisable. When there is a history of hæmorrhages the regional blood-vessels are caught by sutures and tied. In the second group of failures recurrence of the ulcer was only apparent. The trouble was due to improper suturing of the gastro-jejunostomy, at the site of which a new ulcer forms in consequence of heavy silk or linen sutures hanging in the suture line. The length of time these sutures will hang is remarkable; in one case it was 22 months. Eight cases of this kind were re-operated on in the Mayo clinic, in five of which the original operation had been done there. In two there were intercommunicating fistulæ between the stomach, jejunum, and transverse colon. In both of these cases there was fæculent material in the stomach. The finding of colon contents in the stomach after a gastro-jejunostomy is an indication of perforation of a gastro-jejunal ulcer into the transverse colon. In five of the cases heavy strands of silk or linen were hanging in the wound. In two of the cases the condition of the tissues was such that after removal of the suture it was thought wise to cut away the gastro-jejunostomy, completely restoring the wall of the stomach and jejunum by suture and then doing a plastic operation on the pylorus. This procedure proved so difficult that in later cases the gastro-jejunostomy was reopened in the suture line and the suture extracted. The opening was then enlarged by a plastic operation, using interrupted sutures. Such experiences teach that very fine silk should be used for gastro-jejunostomy, that the bite should be as near the margin of the incision as possible, and that, if it is necessary to reinforce a weak suture line, interrupted fine silk sutures are advisable or such sutures should be used for part or the whole of the outer row. It has been Dr. Mayo's practice for a long time to use catgut for the inner row, but it is not this which gives trouble.

SPLENECTOMY AND INCREASED RESISTANCE TO THE TUBERCLE BACILLUS.

OBSERVATIONS directed to show evidence of any power of aiding the body defences against organisms must receive careful consideration. In relation to the tubercle bacillus especially are they of value. Some striking experiments upon the results following removal of the spleen in mice and rats, which appear to demonstrate an increase in the power of resistance to the tubercle bacillus, have been recorded by Lewis (Paul A.) and Margot (A. G.) in the *Journal of Experimental Medicine* (1914, Vol. XIX., p. 187). Into the peritoneal cavity in 21 albino mice was injected a culture of bovine tubercle bacilli; the quantity varied from 1 to 5 mgr. in different animals. Within a time varying from a few hours to a few days all these animals died, and post-mortem examination showed extensive infection of many organs. A similar proceeding applied in 13 mice of similar weight, from which, however, the spleen had been removed, but which had fully recovered from the effects of the operation, showed that a marked lessening of the effects of the inoculations had occurred. Four of the animals were still living at the time of writing, and the rest survived a longer time than did the non-splenectomised animals. Further, the range of

infection was more limited in the body. Similar results were gained in rats. In order to test the strength of the possible objection that the mechanical effect of the removed spleen altered in some way the character of the peritoneal inoculation, a second series of animals was inoculated into the pleural cavity. Ten controls all died; of the ten splenectomised animals, two survived, and the rest, again, lived for a much longer time. In this series, too, the range of infection was limited. Similar experiments upon guinea-pigs and dogs were not successful, and the same results were not gained. The writers cite these observations as being some of the few striking instances of the power of increasing resistance to organisms. Such experiments should stimulate others upon similar lines and suggest a line of research of considerable practical value.

A NEW ROMAN OCULIST'S SEAL.

A LONGER interval has elapsed than has occurred for many years since the discovery of a Roman oculist's seal. A new seal is now reported as having been found in France, at Beaumont, in the Puy-de-Dôme. It bears an inscription in eight lines, half of which are the quadruple repetition of the owner's name, a new one in the category of Roman oculists. The text runs as follows: "Aulus Uritius Hermodorus: Melinum Opobalsamum ad Aspritudines. Diasmyrnes lenementum Thurinum ad (Suppurationes). Crocodes ad Caligines." The name Hermodorus, or Hermodoros, suggests Greek nationality, genuine or assumed, for the oculist, and it is interesting to note that three of the collyria are merely Latin renderings of Greek titles, opobalsamum being *ὀποβάλσαμων*, diasmyrnes *διασμύρνης*, and crocodes *κροκώδης*. Opobalsamum, sometimes on these signets written opobalsamatum and diaopobalsamum, was balm; it is enumerated as a remedy upon these seals, and not heretofore as a cure for aspritudines or the palpebral granulations of ophthalmia. Here the word is qualified by the word melinum, which has appeared previously upon several of these signets and has given rise to some discussion. One explanation is that it refers to the yellow colour of the remedy. In fact, Galen says distinctly that the "emplastra melina" were thus named because of their "colour," which may have been produced by oxide of copper. Sir James Y. Simpson was the first to discuss the precise meaning, or meanings, of melinum, when noting in his "Archæological Essays," 1872, the discovery of an oculist's seal at Bath. This bore an inscription reading "Chrysomælinum ad claritatem," meaning obviously that the collyrium was of a golden yellow colour. In another seal the balm is qualified as "cloron" (*χλωρόν*, green). Subsequently another seal discovered at Cirencester again brought the word into prominence; it read "Melinum ad omnem dolorem." Sir James Simpson cited several instances in which Galen uses the term "melinum" as indicating the colour of collyria, and proceeded to make up a specimen collyrium, using the ingredients prescribed by Galen to produce what he had termed "collyrium melinum delicatum." The result was a composition of yellow colour. The same effect would also be arrived at by the collyria Galen terms "melines," which have saffron as an ingredient.[1] There is, however, good reason for thinking that in some cases the name "melinum" had quite a different derivation and meaning. Pliny says when writing of alum: "The best is that which is called melinum from the isle of Melos. It represses the granulations in the eyes (oculorum scabritias extenuat)." In another passage he states that the Melos alum is the most efficacious. It is true that up to the present no oculist seal yet recovered has certified melinum as a special remedy for scabrities, save the Cirencester seal with its inclusive recommendation "ad omnem dolorem." It is certain that Melos alum in classical times had a geographical title, that of melinum, just as we speak of gum arabic or cognac. Moreover, the connexion of the Melian melinum with collyria viridea is distinctly confirmed by Dioscorides, who says of melinum, "Emplastris viridibus efficacitur inseritur." This agrees with both Andromachus and Galen, the first of whom gives 14 and the second 11 emplastra melina. A third possible derivation of melinum is *μήλινος*, "pertaining to quinces." Pliny refers to melinum (oleum) quince oil, and melinum (unguentum) quince ointment. Thurinum (sometimes Turinum) is derived from thus (sometimes tus), *θύος*, incense. This term was used occasionally for dialibanum, the Latin equivalent of *διαλιβάνων*. Many classic writers affirm its efficacy for ocular diseases. Floridus Macer relates its virtues in the following panegyric:—

> "Thus calidum siccumque gradu dixere secundo,
> Lumina clarificat, lacrymo si solvitur ovi
> Contritum vel femineo cum lacte tepenti."

Many oculist seals speak of women's milk as entering into their collyria. The word following Thurinum is effaced, but was probably "ad suppurationes." A seal whereupon Turinum provides a cure for suppurationes is that of an oculist, M. J. Satyros, which is in the British Museum. The final sentence, "crocodes ad caligines," refers to saffron, a medicament mentioned almost as frequently as myrrh upon these relics, and held to possess the property of improving obscure vision. A special kind of crocodes named "crocodes of Mars" was a bicarbonate of iron. Some of the crocodes specified by oculists on the seals are specified as crocodes Paccianum. The title was derived from the name of the famous Augustan physician, Paccius Antiochus. Curious details as to his attainments and career are to be found in Scribonius Largus (De Compo. Med., c. xiii.). So great was his reputation that both medical men (including Galen) and quacks applied the term paccianum to their various special preparations. Diasmyrnes, or myrrh, is the most favourite remedy mentioned upon relics of this kind. Galen and Scribonius Largus give many collyria containing myrrh. The best specimens came from Arabia and Syria, probably, as the name suggests, from Smyrna. It was an article of commerce, the price of which could be artificially raised by cornering it, and was therefore included in Diocletian's great edict, "De pretiis rerum venalium," which fixed a maximum price for articles of public necessity. The occurrence of this ingredient upon the oculist stamps was fully treated of in THE LANCET of August 10th, 1907. Lenementum (or lenimentum) implied a soothing remedy. Ancient medical authors applied the term "lene" to many remedies. Aetius says: "Leniora medicamenta semper suut inflammatis partibus accomodatiora; verum debiliora quam ut, depulsa inflammatione, ad perfectam sanitatem perducere queant."

[1] Galen specially mentions three melina—M. Atarachum, M. Lucii, and M. Delicatum.

THE CULTIVATION OF MALARIAL PLASMODIA IN VITRO.

ALL attempts to obtain cultures of malarial parasites outside the living body had failed up to 1911, when Dr. Charles C. Bass, of the Tulane School of Tropical Medicine, New Orleans, succeeded in cultivating plasmodium vivax, P. falciparum, and P. malariæ *in vitro*. His technique was described at the time, but has been improved and modified since then as a result of further researches made, in conjunction with Dr. F. M. Johns, in the Panama Canal Zone during 1912. Dr. Bass in 1913 summarised the present state of our knowledge respecting the cultivation of malarial parasites in a paper which he read before a meeting of the American Society of Tropical Medicine at Washington, D.C., and which has recently been published in the current number of the *American Journal of Tropical Diseases and Preventive Medicine* (Vol. I., No. 8). In this communication details of Dr. Bass's technique are set out, and it is interesting to note that his work has been repeated and confirmed by various experts in England and Germany as well as in America. By using this technique, or some slight modification of it, the cultivation *in vitro* of two other red blood-cell parasites—namely, piroplasma canis and P. bigeminum—has been found possible. The malarial plasmodia have only been successfully cultivated in the presence of red blood cells. In these cultures the asexual parasites grow, segment, and form rosettes which burst and give rise to merozoites, many of which enter new red blood cells in precisely the same way as they do in the living human body. From his observations of the parasites *in vitro* Dr. Bass believes that *in vivo* the plasmodia can pass from cell to cell solely when a cell is in direct contact with another one containing a segmenting parasite, and then only when the opening for the exit of the merozoites occurs opposite to the cell to be infected. It appears that the substance of malarial plasmodia differs in consistency from that of the red blood cells, and in consequence the former cannot pass through the smallest capillaries as can the more yielding fluid-like red blood cells. As a result of this unyielding consistency malarial parasites, after they attain sufficient size, lodge in the capillaries of the body, particularly in those parts where the blood current is weakest and where slight obstruction is produced by the protrusion inwards of nuclei of endothelial cells. When this lodgment occurs other red blood cells are forced against them, and if the opening in the infected cell occurs in a favourable position one or more merozoites pass directly into the other cell. If, however, the opening is on the side of the infected cell in the direction of the current the merozoites are poured out free into the blood stream and are killed at once. When the segmented parasite has become broken up sufficiently it can pass on through the capillary into the circulation, where the remaining merozoites are almost instantly destroyed. The débris and pigment are "phagocytised" by the mononuclear cells of the blood and the endothelial cells of the vessels, and finally are either destroyed or stored in the spleen or other tissues of the body. A very heavy infection may result in plugging sufficient of the brain capillaries to produce "cerebral malaria" or coma similar to that occurring in the case described by Captain A. G. Tresidder, I.M.S., in THE LANCET of March 28th (p. 891). It has been suggested that quinine has no direct destructive effect on malarial plasmodia, the action of the drug being, perhaps, to render the red blood cell protecting the parasite more permeable to the all-sufficient influence of the serum. If this be true it appears to Dr. Bass that quinine would only affect the parasites in the circulation and not those lodged in the capillaries; these would not be reached by the quinine until they had segmented. The effect of quinine is defeated by influences such as diet and exertion, which increase the dextrose content of the blood, whereby the permeability of the red blood cells seems to be decreased. The size of the capillaries and the amount of blood pressure have an important influence upon the stage at which malarial parasites recede into the peripheral circulation. It is possible, in Dr. Bass's opinion, that these conditions may after all be material factors in the production of cerebral blocking and its consequences in malaria.

A SALIVARY CENTRE IN THE MEDULLA.

IT was thought at one time that the secretion of saliva was a purely reflex affair. This view was at a later date disproved, and it was shown that whilst the mechanism was to some extent a reflex act, yet its processes were intimately controlled by central influences; but even then the range of this central control and its extraordinary powers of influencing not only the quantity but also the quality of the saliva were not realised until the work of Pawlow was published. With these observations in view the probability now arose that there might exist some definite anatomical basis for this central control in the form of a special collection of cells in the bulb constituting something in the nature of a nucleus, and in the dog such a collection of cells fulfilling this controlling action was discovered in the bulb. The final possibility to be expected was that in man an analogous structure might be found, though the unusual character of lesion which it was anticipated would induce loss of salivary control—namely, one particular to a relatively small area in the bulb—offered practical difficulties. A case, however, has been reported by Feiling in *Brain* (1913, XXXVI., 255), the pathological examination of which appears strongly to suggest that something in the nature of a salivary nucleus does exist in man. The patient, a man, had a fractured base, and died 71 days afterwards. There was found, post mortem, local injury of the trunks of the vagus, glossopharyngeal, spinal accessory, and hypoglossal nerves near their exit from the skull. The paralysis during life involved the left side of the tongue, left sternomastoid and upper part of the trapezius, loss of taste at the back of the tongue left side, left palate, aphonic speech, left vocal cord immobile, and absolute loss of the power of swallowing. There was continuous dribbling of saliva. In the bulb, on microscopical examination, there was found degeneration of the cells of origin in the above nerves. In addition, however, there were scattered degenerated cells in the grey matter of the upper part of the medulla, just dorsal to the inferior olive, extending from the level of entry of the cochlear fibres below to the termination of the inferior olive above. Though these cells cannot be said to constitute a definite nucleus, it is suggested that they are specially concerned in salivation, and that they represent the cells of origin to secretory fibres which pass out with the glossopharyngeal, and

which later, by means of the tympanic branch, become distributed to the parotid.

SUDDEN DEATH FOLLOWING PYELOGRAPHY.

THE practice of taking skiagrams of the pelvis of the kidney and the ureter after the injection into them of some fluid opaque to the X rays is becoming so common that it is of importance to note any cases in which harmful results have followed or have appeared to follow this method of diagnosis. Dr. E. O. Smith, of Cincinnati, Ohio, has recorded a case in the Transactions of the American Urological Association, 1913, in which sudden death followed closely on pyelography. The patient was a woman aged 64 years; she was poorly nourished, but she was able to walk into the cystoscopic room without assistance. The bladder was normal, and both ureters were catheterised without difficulty, and some urine was collected from each kidney, and in neither specimen was there pus or blood. It was decided to take a skiagram of the pelvis of the right kidney two days later, and for this purpose 20 cubic centimetres of a 10 per cent. solution of collargol were injected through a ureteral catheter by means of a small hand syringe. But little force was used and the injection was stopped as soon as the patient complained of pain. A skiagram was then taken. Only some six or eight minutes elapsed between the introduction of the cystoscope and its removal, and five minutes later the patient was dead. At the necropsy several serious lesions were found to be present. There were extensive pleuritic adhesions, and tuberculous nodules in each lung, and there was old disease of the mitral valves. There was much pus with many gall-stones in the gall-bladder, and an abscess beneath the liver communicated with the gall-bladder. Both kidneys showed an acute interstitial nephritis superimposed on a chronic nephritis; and the right kidney contained collargol in the uriniferous tubules and between the tubules. It is clear from the necropsy that this patient had several other lesions which must have had much influence in determining the fatal issue, but it is also clear that the collargol had damaged the kidney. It is generally agreed that hydrostatic pressure is the best means of injecting collargol into a ureter.

A NEW PHYSIOLOGICAL HÆMOSTATIC.

ATTENTION is drawn in a recent number of *Il Morgagni*[1] to the use of the fibrin ferment of the blood as a valuable hæmostatic. This substance is to be found in all the cells of the organism and extracts of all fresh organs contain it. As prepared by Zanoni it exists as a fine powder, of a colour varying from light to dark yellow, slightly unctuous to the touch, and with an odour like that of goose fat. It is slightly hygroscopic and but little changed by light and air, sparingly soluble in water and chloroform, and less still in 95 per cent. alcohol. Aqueous solutions are not limpid, are markedly opalescent, and leave an insoluble residue; they cannot be filtered since most of the ferment remains on the filter. They must therefore be used as they are. This substance, which Zanoni has named "coaguline," reduces the time required for the formation of blood clot from 15 minutes to 1 minute. In other words, the blood coagulates almost immediately in the presence of coaguline, and this power is retained for at least five to six months when it is preserved in the form of powder; after this it gradually diminishes. Certain preparations, however, have remained strongly active even after a year or more. The coagulating power of coaguline resists heat to a certain extent, for even after heating the powder or solution to 95° C. in a water bath its activity is still manifest, although somewhat weakened. This necessitates the time and temperature for sterilisation being reduced to a minimum. Coaguline promises to be of use in checking superficial hæmorrhages and in bleeding from viscera, especially the liver, from the nose, mouth, uterus, and from hæmorrhoids. To ensure a full hæmostatic action it is not enough to apply the powder or solution to the bleeding surface since the blood would wash it away before it had time to complete its coagulating action; it must be kept *in situ* for a short time with a pledget of cotton or gauze and with slight pressure. The solution can be injected into cavities and operation wounds, but for hypodermic use a solution having an insoluble sediment is not suitable. To obviate this the author found that by incorporating the coaguline with sugar an opalescent solution could be obtained with water which could be sterilised by heating.

[1] Il Morgagni, Anno lvi., No. 17, March 22nd, 1914, Milano.

PROVISION OF INSTITUTIONS FOR THE TREATMENT OF TUBERCULOSIS.

WE have received from the Local Government Board a copy of a memorandum on provision of new residential institutions for the treatment of pulmonary tuberculosis which has been sent to the councils of counties and county boroughs. The memorandum has been prepared with the view of affording local authorities and others further assistance in the provision of special residential institutions in connexion with permanent schemes for the treatment of pulmonary tuberculosis. Attention has wisely been drawn to the fact that the planning of the institution will depend on the stage of disease of the tuberculous patients proposed to be admitted to it. A classification of cases of pulmonary tuberculosis is set out arranged from the standpoint of accommodation in residential institutions. Group A contains those cases in which permanent improvement or recovery may usually be anticipated; Group B, cases in which only temporary, though possibly prolonged, improvement may be anticipated; Group C, advanced cases requiring continuous medical care and nursing; Group D, cases requiring special observation: (1) patients admitted for the purpose of diagnosis; (2) patients needing to be watched before the best form of continued treatment can be determined. This is a good practical classification, and we also endorse the further statement that the term "sanatorium" should be used to indicate an institution mainly devoted to the reception of patients in Group A, the term "hospital" to indicate an institution provided for the reception of patients in Groups B, C, and D, and the term "combined institution" to indicate an institution devoted to the reception of patients in all four groups. If admissions to a sanatorium were strictly confined to patients suffering from pulmonary tuberculosis who are afebrile and able to take a certain amount of exercise, the results obtained would be more satisfactory than is at present the case. The types of buildings which are suggested are on the whole satifactory, but we do not like the plan of placing the consulting-room, laboratory, and dispensary in the same building and on the opposite side of a

passage to the kitchen and scullery. The memorandum bears the names of Dr. A. Newsholme, medical officer to the Board, and Mr. Brook Kitchin, architect to the Board. Much care and thought have evidently been given to its preparation.

HOSPITAL MORBIDITY STATISTICS.

IN a leading article on Jan. 31st of this year we referred to the subject of hospital statistics, and pointed out some of the difficulties which would be encountered in rendering them suitable for satisfactory collection and study. We also mentioned that in an article in the *Hospital* a proposal had been made that a bureau might be formed under the supervision of a statistical committee nominated by the authorities of the different hospitals concerned. In connexion with this subject we have received a pamphlet on hospital morbidity statistics by Dr. C. F. Bolduan, assistant to the general medical officer of the Department of Health of the city of New York. He points out that in the United States practically the only vital statistics available for the guidance of public health administrators are those collected and published by the various boards of health—namely, statistics concerning births, deaths, and marriages; but no general data are available concerning the occurrence and distribution of non-fatal cases of disease, except for a comparatively small group of diseases. He has therefore devised a system of "book-keeping" for hospitals whereby various hospitals might be induced to record all their cases according to a uniform nomenclature. The basis of this system is a "discharge certificate," giving, in addition to the patient's name, age, occupation, date of discharge, and admission to the hospital, and so on, the diagnosis arrived at, and any complications which arise. The certificate is well drawn out, and would afford information useful for statistical purposes. A central bureau would have to be established, and all the certificates examined by a trained medical registrar, who would have them arranged according to a standard nomenclature. Dr. Bolduan gives a number of specimen tables to show the utility of such certificates. He also describes the plan adopted for compiling mortality statistics in New York city. His description is rather difficult to follow, but it is carried out by a "tabulating machine." If a system of this kind could be adopted by a collaboration of the hospitals the results would probably be valuable, but it would involve considerable expense, and the appointment of trained men as statisticians would be necessary.

THE PROTECTIVE ACTION OF THE ADRENAL GLANDS.

THE internal secretion of the adrenal glands possesses many powerful properties. They appear to be part and parcel of the sympathetic nervous controlling system; they influence the quality of tone to a marked degree; they are able to induce metabolic changes, as shown by ability to increase the sugar metabolism and to lower the sugar tolerance of the individual. They are, finally, intimately related to the other glands of internal secretion. Now all these qualities, by their very variety and also by the fact that there is never demanded, from one or other or all, isolated and outstanding activity, had for long eluded detection; their massed effect is pooled, as it were, over many general activities, but this very condition suggests that they are concerned in the regulation of general states of the body. Such general states may be well represented by the responses to emotion, especially fear and hate, and as these conditions have their original causes in the elemental need for the preservation of the individual, it would be expected that protective mechanisms, if present, would, under these circumstances, be most powerfully evoked. It would be anticipated, too, that the adrenals would take some part, though the obscurity of their objective effects has prevented our realising exactly what they do. W. B. Cannon, in the *American Journal of Physiology* (1914, XXXIII., 356), reviews the evidence, which goes to support strongly the view already anticipated, that the adrenal secretion can be brought into rapid and valuable action upon lines calculated to strengthen the individual against possible harm, and is similarly brought into play with the major forms of emotion. Its action consists of a shifting of the blood from the visceral parts to the skeletal; an enhanced force of the heart beat; an immobilisation of the viscera; and, in particular, an increase of sugar-supply to those structures most needing it. The shifting of the blood favours the fuller action of the skeletal elements upon which repulse of injury depends; this is gained at the temporary sacrifice of the viscera, which are immobilised; the more powerful cardiac action is effected by the peculiar action of the adrenal secretion upon the coronary arteries, for these are the only vessels which dilate instead of contract with the action of adrenal. Lastly, the increased ability of the tissues to metabolise sugar increases their power, and in the skeletal tissues this is, again, just what is wanted. The whole gamut of changes afford the spectacle of a most intimate and closely organised arrangement for the rapid focusing of added power to those structures most valuable for the immediate end in view—namely, the protection of the individual.

MUSEUM OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

FOUR years ago the Council of the Royal College of Surgeons of England sanctioned a scheme which is likely to improve the utility of the museum to medical men. The pathological collection—the largest of its kind in the world—has always been divided into two sections, one illustrating the general principles underlying the processes of healing and of disease, the other illustrating the injuries and diseases of the individual systems or regions of the body. In the scheme sanctioned by the Council the section of general pathology has been greatly extended, and now occupies special cases which fill the floor space of one of the chief rooms of the museum. The great task of reorganising this department of the museum has been carried out by the pathological curator, Mr. S. G. Shattock, assisted by Mr. Cecil Beadles. The scheme is now far enough advanced to give visitors to the museum an opportunity of observing the masterly way in which it is being carried out. The sections illustrating the various forms of tumour formation—benign and malignant—are particularly instructive and fully representative of our present standard of knowledge. In the forthcoming series of museum demonstrations, which commence in the theatre of the College on Friday, April 17th, at 5 o'clock, Mr. Shattock will give an account of the

sections of this collection which exemplify tumours arising in connexion with bone, the various forms of papillomata and adenomata, and the many varieties of sarcomata. The dates and subjects of these demonstrations will appear in our Diary of the Week. They are open to all students of medicine and medical men. Professor Arthur Keith, who shares the responsibility of these museum demonstrations with Mr. Shattock, has selected the following subjects: Difficulties in the diagnosis of sex, the normal and pathological anatomy of the colon, and adhesions, bands, and mesenteries of the peritoneum.

INTRA-ABDOMINAL MALIGNANT DISEASE.

MALIGNANT disease in the abdomen is one of the commoner causes of the death of middle-aged and old people, perhaps, too, a cause operating with increasing frequency. Yet, as every medical practitioner knows, it is as a rule extremely hard to diagnose in its early stages. In so many cases it is latent, in so many others it simulates some other disorder, that it but rarely comes under observation in time for effective surgical interference, for at the present time the only hope of cure lies in operation. Professor R. Schmidt, of Innsbruck, has written a lengthy essay[1] upon the subject, dividing it into three parts. The first part gives a general account of the methods of examining patients suspected of having malignant growths within the abdomen. He has been accustomed to lay some weight on the presence or absence of Ehrlich's diazo-reaction here. This reaction is almost always positive and well marked in peritoneal tuberculosis, enteric fever, and streptococcal parametritis; it is sometimes positive and often not well marked in various forms of tuberculosis and in cholangitis, and also in malignant disease complicated by secondary infection with B. coli or streptococci. No diazo-reaction is found in the urine of patients with cirrhosis of the liver, myeloid leukæmia, cardiac or hepatic ascites, gastro-enteritis, or gastro-intestinal ulceration. The second part, occupying 100 pages, deals with the various special forms of malignant disease under discussion and the special means by which they may be diagnosed in each case; cancer and sarcoma of the stomach, intestine, liver, gall-bladder, pancreas, and kidney are those chiefly considered. The third part, just half the volume, is filled with numerous illustrative case histories, often completed by the records of obductions. The book is full of valuable matter, prolix, often calling out for condensation. It forms rather heavy going for the casual reader, but is a mine of information for anyone seeking instruction on specific points that fall within its compass. The translator has adhered too closely to the German idiom of his original.

THE King has sanctioned the following promotions in and appointment to the Order of the Hospital of St. John of Jerusalem in England: Colonel Charles Robert Tyrrell (from Esquire) and Mr. Richard Henry Grimbly (from Honorary Associate) to be Knights of Grace; Major Sir Edward Scott Worthington, M.V.O., R.A.M.C., to be an Esquire.

[1] Diagnosis of the Malignant Tumours of the Abdominal Viscera. By Professor R. Schmidt. Authorised English version by J. Burke, of Buffalo, N.Y. 4to, pp. xiv. + 362. London: W. Heinemann, 1913. Price 17s. 6d. net.

THE MORTALITY ON THE RAND: SOME OF ITS CAUSES.

BY R. G. BROCK, L.R.C.P. & S. EDIN., D.P.H.

So much has been said and done from the therapeutic side in the hope of reducing the appalling death-rate on the Witwatersrand goldfields, without to any appreciable extent improving matters, that the time has come when an examination of the underlying causes of this mortality may be made with profit, inasmuch as should it be possible to bring these clearly into the light they may automatically reveal the trend of the measures which should be taken to remove them, or at least reduce their evil influence to a minimum.

The diseases chiefly responsible for the abnormal mortality are pneumonia and tuberculosis; the following remarks therefore apply more especially to these. Elsewhere[1] it has been shown that 80 per cent. of the natives coming to work on these fields suffer from a constitutional "taint" which renders them peculiarly susceptible to contract both pneumonia and tuberculosis in a virulent form. In that paper it was stated that in 7660 natives examined 68·5 per cent. had enlarged epitrochlear glands. In a further examination of 132 consecutive cases of natives returning home and certified as suffering from the diseases under which they are grouped by various medical officers, the percentages having enlarged, indurated, freely movable epitrochlear glands are found to be—

91	cases of tuberculosis	=	100 per cent.
31	" "debility"	=	87 "
10	" pneumonia	=	90 "

showing clearly that these diseases found a very favourable soil in persons having this gland enlarged.

In an examination of 191 white persons (105 males and 86 females) of South African birth the condition was found in 30 per cent. of males and 10 per cent. of females.[2] In a paper read before the International Congress of Medicine, London, 1913, Mrs. Fuchs von Wolfring records that she examined 44 cases of tuberculosis, using Carl Spengler's methods of blood staining, and found spirochætæ in 100 per cent. of them.

Carl Spengler has been directing his attention to this question for over 20 years, and has now arrived at the conviction that numberless tuberculosis cases develop in the hereditary syphilitic constitutions. Those organisms already damaged by the syphilitic poisons are predisposed to tuberculosis. ("Tuberculose-Therapie nach Dr. Carl Spengler, mit besonderer Berücksichtigung des I-K," von Dr. Bonohr, Assistent von Dr. C. Spengler, published in the *Beiträge zur Klinik der Tuberculose.* Band xvi. H. 4. 1910.[3])

[1] THE LANCET, May 11th, 1912, p. 1270.

[2] The marked difference in the percentage of the sexes suggested the question, Are the seats of election for "latent syphilis" different in man and woman? My own experience of over 28 years in South Africa suggests that in woman the uterus *may* be such a "seat," on account of the great frequency of various forms of "metritis" in otherwise apparently healthy women. In the books of an institution I was privileged to examine, excluding all cases resulting from accident and childbirth, out of a total of 42 cases there were 6 cases of abortion, 2 of "curetting," 5 of retroflexion, 1 of perimetritis, and 13 of endometritis, or 64 per cent. of the cases that may be considered as resulting from pathological conditions of the body of the uterus. In the Epitome in the British Medical Journal of August 4th, 1912, under the heading "Uterine Sclerosis," Swediy is noted as saying that uterine sclerosis is not rare in young women, that the condition is often mistaken for metritis or fibroids, and that Richalot has proved this. The figures given are those supplied by me in evidence before the Tuberculosis Commission on May 1st, 1912.

[3] For the translation of an extract from this paper, and a number of extracts from the works of Carl Spengler on the same subject, and for directing my attention to them, I am indebted to Miss K. Ives.

For a good many years there have been repeated warnings from medical men in South Africa of the increasing spread of syphilis among the white population, as the result of careless relations with the black races. Further, it is a generally accepted view that South African born natives are more susceptible to pneumonia and tuberculosis than are those from other countries, and that they succumb to these diseases much more quickly than do the latter. It may therefore be presumed that a constitutional "taint" is so widely prevalent in both races that it is unnecessary to consider them separately in this respect, and that the mining population as a whole is badly prepared constitutionally to withstand an attack of either pneumonia or tuberculosis and is abnormally susceptible to both diseases.

Altitude.

In the case of natives coming from the coast or other place of low altitude to the Rand great changes occur in the blood. The normal number of red cells per cubic millimetre at sea level is roughly 5,000,000, while on the Rand, 6000 feet above sea level, it is from 7,000,000 to 7,500,000. It takes from 14 to 20 days after arrival on the Rand for the blood to reach this standard. During this time the oxygen-carrying capacity of the blood must be below normal, and the tissues, receiving an insufficient supply, must be thereby reduced in disease-resisting power. Carl Spengler has shown that the *red* cells are the main producers and storehouses of tubercle antitoxin,[4] often containing a million times more than the corresponding serum. The white cells contain less than the red but more than the serum. While the red cells are not in a normal condition they cannot perform their functions normally, and the production of antitoxin must be injuriously interfered with.

These facts would appear to supply the explanation of the oft-repeated observation that "boys" are much more liable to contract pneumonia and tubercle during the first two or three weeks of their stay on the Rand than later. Some hold that the greatest number of cases of sickness occurs in the first 24 hours, but the fact that the mass of native workers come off a long and tiresome journey, without the opportunity of getting any rest, and are drafted at once to their various destinations along the "Reef," suggests that many of these "first 24-hour" cases are probably due to simple exhaustion. It has further been found that there is a direct proportional relation between the amount of hæmoglobin and the amount of immune substances in the blood. It seems therefore probable that if special care were taken of the "boys" during the transitional period it might materially aid in reducing the sickness-rate and increase the chances of escaping pneumonic and tuberculous infection. What amount of injury results to the blood, if any, from the men spending half the day at an altitude of 6000 feet and the other half at from 1000 to 3000 feet there are no data to indicate.

Conditions of Living on a Mine.

To ensure a standard of health sufficiently high to enable the individual day after day to perform a fair day's work in quantity and quality three things are essential—sufficient food, sufficient rest, and sufficient warmth (clothing, bedding, &c.). In the case of the white man, whether these essentials are obtainable under the working conditions on a mine depends mostly on himself—e.g., a man comes "off shift" and without changing or washing cycles to his home in the "single men's quarters," gets into his room, and tumbles into his bed without even removing his working clothes, "refreshes" himself thoroughly and goes to sleep and gets a chill. On recovering he is unable to take sufficient food. This goes on day after day till pneumonia claims a victim.

A steady hard-working man after "coming off" changes, bathes, and returns to his room, which is often shared by another miner who may be a case of open tuberculosis, who will not permit either window or door to be kept open; he "turns in" and goes to sleep in an atmosphere of tuberculous vapour. In due time tuberculosis claims an innocent victim. These rooms are mostly of the back-to-back type, and are dirty and verminous, making restful sleep impossible. A considerable number of men, again, are very "free livers," who run needless risks from exposure, disease, and other debilitating influences. From the ranks of these comes a goodly number of cases of tuberculosis and pneumonia.

The case of the native is somewhat different. The standard ration is: 20 oz. mealie meal, 8 oz. wheat bread, and 4 oz. beans (dried) per day; 3 lb. "meat," 22 oz. pea nuts, 16 oz. treacle, and 40 oz. vegetables per week. This ration is added to in some of the mines. There seems to be a good deal of difference of opinion as to the suitability of this ration. It is a ration built entirely on its calorie value, it is not a toothsome diet, there is a considerable waste in unconsumed food, and there is a considerable amount that is not digested or assimilated, while Casimir Funk has shown that the manner of cooking may influence the value of a diet. The compilation of an *efficient* diet is undoubtedly difficult and can only be attained by direct experiment. A "boy's" clothing usually consists of a blanket—often a mere rag, a pair of trousers, and a shirt. His bed—plain wooden boards without bedding. The "compound" room in which he eats and sleeps is a large draughty barn, under-heated and over-ventilated, always dusty, often dirty and verminous. Comfort there cannot be, and under the conditions warmth and restful sleep are well-nigh impossible. Add to this that the native is extremely sensitive to cold, and that in winter there may be as much as 20° F. between the wet and dry bulb thermometers, and the least imaginative will realise that the most robust constitution is liable to break down under such treatment. How are those who are constitutionally susceptible to pneumonia and tuberculosis to pass through such an ordeal unscathed? They cannot and do not. These are the places where, and the conditions under which, pneumonia and tuberculosis spread, flourish, and destroy.[5]

Is it lack of knowledge, simple thoughtlessness and lack of sympathy, or downright callousness that permits such conditions to exist? Probably some of each. The "great expense" has been a reason against any change. But when the problem is examined carefully one cannot help thinking that

[4] Spengler's work has been confirmed by S. Fuchs von Wolfring, Dr. Rachmanlnoff, Dr. Rossel, and Dr. G. Fuchs, of Belbrich, in over 1000 different specimens of blood, also by Sewastianoff.

[5] Since this was written I have been informed that owing to the shortage of "boys" recently the compounds are less crowded than usual, and that there has been a very marked fall in the sickness rate.

all the necessary changes would not only not raise the "working costs" of a mine, but would prove to be an investment that would return a handsome dividend.

Working Conditions.

Little need be said on these. Dust, carbonic oxide, and nitrous fumes should, of course, be reduced to a minimum by improved ventilation and increased care; but no matter how stringent regulations may be, in the nature of things they will still exist in all the mines to some extent, and the two latter probably continue to do some harm, the CO by putting some hæmoglobin "out of action," and the fumes by causing some bronchitis, thereby lowering the resisting power against bacterial attacks locally and generally. The dust that might remain in a well-ventilated mine would be of little account. Oliver in his "Diseases of Occupations," p. 293, gives an excellent illustration of this. He quotes from a report by Dr. Brembridge on the Kolar gold mines in India to the following effect:—

In the Kolar gold mine there are 40,000 coolies employed; the rock is hard. Dr. Brembridge went to India expecting to meet with cases of miner's phthisis, but he failed to find evidence of the disease, except in men who came from the Transvaal. Although no precautions are taken in the Kolar mines to throw water on the surface to diminish the dust after the use of explosives, and the men work hard, yet Dr. Brembridge finds that the miners, native and white man, keep good health. ..... There is plenty of dust in the Kolar mines; it is hard quartz rock that is blasted, and without such precautions as the spraying of water. ..... Dr. Brembridge finds that a large percentage of miners die from pneumonia, due not so much to the dust as to the fact that the men, after working hard for eight hours, are obliged to climb ladders to a height of 2000 feet in a state of fatigue and when perspiring, and thus become chilled. The proof that this has had much to do with the prevalence of pneumonia has been demonstrated by the fact that since a skip, whereby the coolies can ride to the surface, has been introduced into one of the mines from which the largest number of cases of pneumonia came, the number of cases of acute lung disease has considerably diminished.

Here, too, this cause of pneumonia to some extent exists, but here the "boys" come from the warm moist mine into an exceedingly dry and cold air—indeed, it may be compared to putting them into a freezing chamber.

A glance at some of the "rates" for Germiston district helps to bring out the importance of the above remarks. In the following table the incidence rate for pneumonia and the death-rate for phthisis (tuberculosis and miner's phthisis) for three years are given for three races then working on the mines. Underground they all worked under the same conditions and were exposed to the same dangers, save that the native was less well protected against chills on coming to the surface than were the other two races.

—	Whites.			Natives.			Chinese.		
	1905-06	1906-07	1907-08	1905-06	1906-07	1907-08	1905-06	1906-07	1907-08
Pneumonia incidence per 1000	2·30	2·54	3·44	28·04	29·37	45·07*	2·05	1·37	1·96
Phthisis deaths per 1000 (tuberculosis and miner's phthisis)	2·28	2·45	1·23	4·94	3·67	3·63	1·58	0·87	1·71

* The importation of natives from the tropics caused the very great increase in the rate for this year. For all the three years a good many cases of tuberculosis in natives came under this head.

These figures show that the natives suffered more than the other races. In the case of whites and natives the figures for "phthisis" are very much below what actually existed on account of the whites going and the natives being sent out of the district when they became unfit for mine work. Nevertheless, the Chinese, although the full rates are recorded, show lower figures than black or white. How is this to be explained, seeing that the Chinese occupied the same compounds as the natives occupy now? The Chinese had better food and it was well cooked, while their sleeping quarters were conspicuous for their *apparent* cleanliness and the great care taken to procure personal comfort, good warm bedding and bed clothes, and plenty of these. They did not consume their food in their sleeping quarters, and were not in the habit of indulging to excess in intoxicating drinks as the other races were. The figures speak eloquently in favour of sufficient food, sufficient warmth, and sufficient rest. There are others that might be considered, but those dealt with seem to me to be the outstanding causes which lead up to a death-rate unparalleled in any civilised country, and the bringing clearly into view the framework on which they rest discloses the means by which they may be removed or modified, and this death-rate brought more into line with those obtaining for similar industries in other parts of the world.

Conclusions.

1. The "Reef" population is, as a whole, abnormally susceptible to pneumonia and to tuberculosis, and constitutionally badly prepared to withstand the attacks.

2. The change from a low to a high altitude disturbs the physiological equilibrium of the blood of new arrivals on the Rand, and renders them extremely susceptible to disease until this equilibrium is re-established.

3. Putting new arrivals to heavy work before this physiological equilibrium is established (about three weeks) increases the sick lists and raises the death-rate.

4. The great dryness of the air in winter causes much pneumonia, especially in those coming "off shift," unless effective protective measures are provided and enforced.

5. The natives are underclad and do not receive sufficient rest or sleep, and their food requires investigation as to its physiological efficiency and proper cooking.

6. The causes which are responsible for the abnormal death-rate are capable of removal in large measure, and the chief supports of these are—false economy and callous inefficient administration.

ROYAL INSTITUTION.—At a general meeting of the members of the Royal Institution held on April 6th the Duke of Northumberland, as President, announced that the septennial award under the Acton Endowment had this year been made to Professor C. S. Sherrington, Wayneflete professor of physiology in the University of Oxford, for his important work entitled "The Integrative Action of the Nervous System." This work was a synopsis of an elaborate paper published in the Philosophical Transactions of the Royal Society on Experiments in Examination of the Peripheral Distribution of the Fibres of the Posterior Roots of some Spinal Nerves.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

ELECTION OF PRESIDENT.

AN Extraordinary Comitia was held on Monday, April 6th, Sir THOMAS BARLOW, the President, being in the chair.

The PRESIDENT delivered the usual annual address, in which he referred to the Royal honours which had been conferred on Fellows, Members, and Licentiates during the past year; also to the Harveian oration and the lectures which had been delivered before the College. He also alluded to the award of medals and prizes, and the various events within the College. He likewise mentioned the gifts which had been made to the College. He read obituary notices of the Fellows who had died during the year:—George Ernest Herman, Robert Leamon Bowles, Frank Buzzard, John Charles Thorowgood, Alfred Lewis Galabin, and Philip Frank. He thanked the Censors' Board and the other Fellows for their unfailing loyalty during the past year, and then vacated the chair.

Dr. P. W. LATHAM proposed a vote of thanks to the President for his address, and for his services to the College, which was carried by acclamation.

The ballot for the election of President then took place, and Sir Thomas Barlow was re-elected by a large majority.

The Senior Censor (Sir James Kingston Fowler) delivered to the President the insignia of office. The President gave his faith to the College and thanked the Fellows for re-electing him.

The following communications were received: (1) From the secretary of the Royal College of Surgeons (three letters); (2) from the clerk to the Privy Council, dated March 5th, to inform the College that the Sixth International Congress on Thalasso-Therapeutics will be held at Cannes on April 15th; (3) from the secretary of the Board of Control, dated March 25th, asking for suggestions concerning the use of a grant of money "for the purpose of aiding and encouraging scientific research into the causes and treatment of mental disease and mental defects." The President was asked to nominate a subcommittee who should report to the Council.

A report was received and adopted from the Censors' Board, dated March 2nd, concerning the employment of unqualified persons for purposes of treatment under the National Insurance Act. The report was as follows:—

In the course of last year communications passed between the Censors' Board and the Insurance Commissioners on the subject of the employment of non-qualified persons under the Insurance Act. The contention of the Commissioners appeared to be that, while none but registered medical practitioners are admissible to the panels, yet there was nothing in the Act of 1911 to prevent insured persons who are allowed or required to make their own arrangements for medical benefit from making such arrangements with persons who are not legally qualified medical practitioners.

More recently the Commissioners "for the purpose of removing doubts and for the convenience of Insurance Committees" have altered the Regulations in this respect, and in their new Regulations [National Health Insurance (Medical Benefit) Regulations, 1913, Section 44 (2)], and in a "Memorandum with regard to persons making their own arrangements under Section 15 (3) of the National Insurance Act, 1911," the possibility of treatment by unqualified persons under this Section of the Act is specifically recognised, and provisions are made with respect to it.

The President and Censors consider that to give to unqualified persons any status whatever under an Act of Parliament is an innovation which should not pass unnoticed by the College.

They therefore submit the following Resolution for the consideration of the College:—

NATIONAL HEALTH INSURANCE (MEDICAL BENEFIT) REGULATIONS, 1913.

The College observes with regret that in Section 44 (2) of the National Health Insurance (Medical Benefit) Regulations, 1913, and the Memorandum issued in connexion therewith, provision is made whereby insured persons who make their own arrangements for Medical Benefit under Section 15 (3) of the National Insurance Act may obtain treatment from non-qualified persons.

Hitherto none but duly qualified medical practitioners have been employed, as such, in any public capacity, and the College deplores that now, under an Act professing to promote the health of the nation, recognition should be given and provision made for the payment of public money to a class of persons who have not obtained a legal qualification to practise medicine, and concerning whose medical knowledge there exists no sort of guarantee.

A report, dated Feb. 12th, was received and adopted from the committee nominated July 3rd, 1913, concerning the infectivity of pulmonary phthisis. The report summarised accepted knowledge upon the infectivity of tuberculosis, and indicated that the tubercle bacillus could enter the body by inoculation, by inhalation, and by swallowing, while it emphasised the absence of evidence that tuberculosis can be conveyed by breath alone, or by emanations from patients, or by their garments unless soiled by discharges. The precautionary measures recommended are: the careful disposal and disinfection of the sputum and other discharges; the disinfection or destruction of soiled handkerchiefs, clothes, and linen; the removal of dust by frequent moist cleansing of floors and walls; and abundant air space and free ventilation. The report closes by stating that no risk is incurred by living in the immediate neighbourhood of institutions for the treatment of tuberculosis which are properly conducted.

The committee of management reported that Sir W. Watson Cheyne had inspected the examinations of the Egyptian Medical School, and a vote of thanks was accorded to him for his services. The committee also reported that Wellingborough School and the Bradford Technical College had been added to the list of institutions recognised by the Conjoint Board as giving instruction in chemistry and physics and biology respectively, and recommended that the Royal Naval Hospital, Chatham, should be recognised for the instruction necessary for the diploma in public health.

ROYAL COMMISSION ON VENEREAL DISEASES.

AT the twenty-seventh meeting of the Royal Commission on Venereal Diseases evidence was given on behalf of the Society of Medical Officers of Health by Dr. A. K. Chalmers, the medical officer of health of Glasgow and president of the society, and by Dr. Louis C. Parkes, medical officer of health of Chelsea.

They drew attention to—

1. The lack of exact information regarding the present prevalence of syphilis and other venereal diseases either as causing illness or death.
2. The misleading or incomplete character of certified causes of death, particularly of the remote causes in death from diseases of the nervous or circulatory system.
3. The absence generally of any systematic provision for the recognition and treatment of the diseases in question.
4. The relationship of syphilis to miscarriages, still-births, and deaths among infants in the first year of life, especially the first four weeks.

The Society of Medical Officers of Health were, they stated, of opinion that administrative action was desirable for the purpose of providing facilities for the recognition and treatment of venereal diseases. They recommended that the local authorities should be required to place at the disposal of medical practitioners facilities for diagnosis by bacteriological and other methods, and that accompanying any such request for examination the practitioner should apply a statement showing the age, sex, condition as to marriage, number of children, and leading features of the disease present, but not including the name of the patient. They did not recommend the adoption of a system of notification in the ordinary sense. Local authorities should also be prepared to arrange for the treatment of persons suffering from venereal diseases either in dispensaries or hospitals under their own responsibility or by arrangement with general hospitals and dispensaries. It was important, they thought, that the facilities provided by the local authority should be available for any person who applied for them, whether that person was a resident in the district of the local authority or not. They recommended that the Local Government Board should issue an order declaring venereal diseases to be endemic diseases threatening the health of the population, and that the Board should make regulations governing the provision of facilities by the local authorities. It was necessary, they thought, that the local authorities should be assisted by a considerable grant in aid from Government funds.

Dr. Parkes on his own behalf submitted a detailed scheme of action by local authorities under regulations to be issued by the Local Government Board. He was of opinion that

the whole expenditure incurred by local authorities in regard to these diseases should be borne by Imperial funds. Both Dr. Chalmers and Dr. Parkes were opposed to notification of venereal diseases, but Dr. Parkes thought that after two or three years' experience of systematic action by local authorities against the diseases it would be possible to determine whether any form of compulsory notification could be introduced, and whether penalties should be imposed upon persons who, knowing themselves to be suffering from a venereal disease, by their conduct expose other persons to infection.

At the twenty-eighth meeting evidence was given by Sir Donald MacAlister, Principal and Vice-Chancellor of the University of Glasgow, and President of the General Medical Council.

Sir Donald MacAlister described the powers of the General Council in relation to medical education and the way in which these powers are exercised, for the securing the maintenance of such a standard of proficiency as shall guarantee the possession by registered practitioners of the knowledge and skill requisite for efficient practice. With regard to instruction respecting venereal diseases, he said that certain reports made to the General Medical Council and the examination papers used at qualifying examinations, as well as the results of a special inquiry he had made for the purposes of the Commission, enabled him to say that questions on these subjects were set with such regularity by every licensing body that candidates could not fail to be aware of the importance attached to the subject and of the necessity laid upon them to study it seriously as a condition of success.

On the subject of quack treatment Sir Donald MacAlister said that the General Council had taken every opportunity to press on the Government of the day the importance of restricting the free practice of medicine, surgery, and midwifery by unqualified persons, and the Council was strongly of opinion that steps ought to be taken to prevent the cruel wrong done by permitting free practice in branches of these subjects on the public without any previous qualification. He pointed out that without difficulty veterinary surgeons had obtained an Act which protected them and protected the lower animals, so that no person could use any title suggesting that he had a veterinary qualification or practise as a veterinary surgeon on the lower animals without being qualified. In fact, Parliament had protected the lower animals much more effectively than it had protected human beings against the ravages of the quack. He thought that a special case could be made out for preventing unprofessional treatment of venereal diseases by reason of the severity of these diseases and their effect upon the population.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

MEETING OF COUNCIL.

A QUARTERLY meeting of the Council was held on April 2nd, Sir RICKMAN GODLEE, the President, being in the chair.

The SECRETARY reported the death of Mr. William Bruce Clarke, past member of the Council and of the Court of Examiners.

The best thanks of the Council were given to Sir Watson Cheyne for his services as visitor to the examinations of the Egyptian Medical School at Cairo.

In accordance with the recommendation of the Jacksonian Committee the Jacksonian prize for the year 1913 was awarded to the author of the dissertation on "Malformations of the Small Intestine: their Mode of Origin, the Morbid Conditions which Arise from Them, and their Treatment," bearing the motto "Aliud ex alio clarescet," and when the President opened the envelope bearing this motto it was found that the author was Mr. J. Howell Evans. It was resolved to request Mr. Evans to attend the ordinary meeting of the Council on May 14th to receive the Jacksonian prize.

It was resolved that the subject for the Jacksonian prize for the year 1915 should be "Congenital Dislocations of the Joints: their Pathology and Treatment."

Surgeon-General Arthur William May, C.B., R.N., Medical Director of the Navy, was elected a Fellow of the College.

A letter was read from Mr. J. Richardson Cross reporting his attendance at the Home Office on Jan. 29th to give evidence before the Committee on Factory Lighting as requested by the Council, and stating that in support of his evidence he was able to lay before the committee answers to a letter circulated by him among members of the Ophthalmological Society bearing on the questions under consideration. The thanks of the Council were given to Mr. Cross for his letter.

A letter was read from the General Secretary of the Sixth International Dental Congress stating that the Committee of Organisation accept with thanks the offer of the Council to hold a reception at the College for the members of the Congress.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

County of Middlesex.—Dr. C. W. F. Young's report for 1912, recently issued, gives a large amount of interesting information on the health and administration of this county, which, though small, is one of the most populous of the county areas. The estimated number of inhabitants is about 1,170,000, of which all but 58,000 are in "urban" districts. The various statistical data for the county as to births, incidence of infectious disease, case mortality of infectious diseases, and deaths from different causes are well illustrated by diagrams which save much study of tables. The decline in the mortality of notified cases of diphtheria from 1902 to 1912 is specially noteworthy, but it has to be remembered that the extension of bacteriological methods in the diagnosis of diphtheria leads to an increasing amount of notification of illness the nature of which would not otherwise have been recognised, and also that "contacts" presenting no symptoms of illness at all, but returned as "positive" on a swab examination, are now frequently included among notified cases. Dr. Young insists on the importance of bacteriological examinations being made of all school children with sore-throat or nasal discharge during their attendance at school, and urges that closure of school for diphtheria will only disperse the children where they cannot be kept under supervision or frequent examination, with the result that on re-opening some will probably still be in an infective condition. This doctrine is now generally accepted, and it is interesting to note that the practical experience of Middlesex schools gives support to it. The tables for whooping-cough show that, to judge from the mortality returns, this disease shows little tendency to reduced prevalence, and some 200 deaths are returned annually as due to this cause. The development of tuberculosis provision is only touched upon in this report, but a map is inserted of the five areas into which Middlesex has now been divided for the purpose of a county dispensary service. A table showing the methods of disinfection in use in each district in the county illustrates the large extent to which the formalin spray has displaced sulphur dioxide fumigation as a means for disinfecting rooms, the latter being now retained in only three or four of the 37 districts. Eleven of these districts now dispose of their house refuse by combustion in destructors, and the extension of this practice is specially desirable in a county like Middlesex, where it is hardly possible to get rid of refuse by depositing it on land without giving rise to effluvium nuisance. Another matter closely affecting the health and amenities of the county is the condition of the small rivers which have to receive large volumes of effluent from sewage disposal works. The county council and its medical officer of health have in the past done much to prevent the discharge of offensive sewage into these streams, but it is clear that continued vigilance is necessary in consequence of the large increase of populations on the watersheds and the tendency of local bodies to provide inadequate purification plants. The proportion of the total births attended by midwives, apart from those in which the midwife merely acted as a nurse, is considerable—11,020 out of 27,576. Notifications that medical help had been requisitioned were received in regard to 883 of these cases.

No death of a mother occurred where a doctor had not been called in. A prosecution of an uncertified woman was dismissed by the magistrates on the ground that the six confinements which she had attended were emergency cases, as she had not been engaged beforehand by the mother and was only sent for when the mother was in labour. On representation of the matter to the Central Midwives Board the county council was informed that the same state of affairs had been brought to notice before, and that there was reason to believe that the Privy Council, on the Board's recommendation, were prepared to amend the Midwives Act so as to strengthen the powers of local supervising authorities in this respect.

County of East Sussex.—Mr. A. G. R. Foulerton, after referring to the perennial difficulty in obtaining reports from some district medical officers of health early enough for county purposes, points out that in health matters East Sussex is a well-favoured county, and was particularly so favoured in 1912. The only excessive rate was that from "senile mortality," and though the birth-rate is low (17·4) the children as a rule "are born to healthy surroundings and are not likely to be killed off during the first year of life by the insanitary conditions prevailing in large industrial districts which have higher birth-rates and huge infantile mortality rates." The tuberculosis death-rates are among the lowest of the English counties. Mr. Foulerton finds that the prevalence of pulmonary tuberculosis in children is exceptionally low, as in the case of 24,000 children "thoroughly examined" in course of school medical inspection the percentage with pulmonary tuberculosis was no higher than 0 04.[3] The report, besides giving useful accounts of the different districts, has some interesting addenda. One of these gives notes on the statistics and etiology of cases treated in the county lunatic asylum, supplied by the medical superintendent. Another is contributed by the Lewes coroner, Mr. G. V. Benson, on the circumstances of the 281 inquests held in 1912, one being on a partly disabled workman who, after worrying himself trying to understand the Insurance Act regulations as to unemployment, "came to the conclusion that they might be prejudicial to him in the future, and that it was better to get rid of the risk by throwing himself over the cliff." A third addendum, by Mr. George Finch, gives the results of examining the arms of children in different districts for vaccination scars, and includes diagrams in which the percentage of children vaccinated are plotted against the year of birth, and which show conspicuously the fall in vaccination which set in after 1907 and has continued since. The fall, Mr. Finch observes, may continue until perhaps in future the vaccinated may form a smaller proportion of the population than formerly did the pock-marked; medical officers of health and sanitary authorities would then have to deal with a population more susceptible to the virus of small-pox than has ever been the case before.

County of Hampshire.—In considering the supervision of the milk-supply and its present defects Dr. R. A. Lyster presses strongly for general certification of milk, and states that proper milk standards are not only necessary to efficient milk control by public health authorities, but are indispensable to the ultimate well-being of the milk industry itself. Milk, he considers, must be graded and sold on grade, just as other food materials are graded and sold. For grading purposes milk would best be divided into two great classes—the raw and the pasteurised varieties. Each class can be divided into grades according to its composition and its bacteriological purity. The county had a low rate of infant mortality in 1912, and in referring to the circumstance that the incidence of this mortality was higher among the poor Dr. Lyster protests against the assumption that bad housing is concerned in the matter, and reminds us that statistics classifying the people according to housing conditions is merely a classification according to poverty. The essential cause of excessive infantile mortality is poverty with "its invariable accompaniments—insufficient food for both mother and child, lack of medical attention or nursing, absence of suitable milk-supply, even if there were means to purchase it, uncleanliness, overcrowding, alcoholic indulgence, and such like." It is possible to agree with this view and still to find a preventable cause of infant mortality in "bad housing," which may be inimical to cleanliness, and may be largely responsible both for overcrowding and for alcoholic indulgence. The county death-rate for tuberculosis, which was 0·91 in 1910, has since shown a slight increase to 1·04 in 1912; that of the rural districts is now higher than that of the urban, and as high as it was ten years ago. The increase is attributed partly to the migration of diseased persons into rural districts after their condition is known. The report advocates that discarded warships, the position of which could be changed according to the weather and temperature at different times of the year, should be used as sanatoriums. In course of the county laboratory work a specimen of home-made wine was received which was suspected to have caused lead poisoning. This was analysed and found to contain 2·9 parts of lead per 100,000, and is stated to have been contaminated by lead from the glaze of the earthenware pan in which it was made.

[3] THE LANCET, March 28th, 1914, p. 916.

REPORTS OF SCHOOL MEDICAL OFFICERS.

Borough of Kingston-upon-Thames.—Mr. H. Beale Collins records the beginning of an inquiry into the relationship between physical development of children and size of families. In children coming from families of six only in 71 instances they were above normal and in 80 below it. Contrasting entrants and leavers the figures point to a decline in size of families. The biggest "leaver" family was 22, the biggest entrant, however, only 14. The tables, however, have not much scientific value as they stand, as the criterion of "physical condition" is not rigidly defined and appears to refer only to standards of weight and height. Very little medical treatment is obtained, only about one-quarter of the children found defective obtaining it.

County Borough of Barnsley.—Dr. F. J. Sadler's report on the Queen's-road open-air school shows that it is reserved exclusively for children suffering from pulmonary tuberculosis. Of 62 children who were treated for a time sufficiently long for a judgment to be formed, 11 per cent. were improved, 45 per cent. improved very much and on the way to a cure, and 35 per cent. actually cured. One child died while attending the school, but from leucocythæmia. These satisfactory results were obtained by keeping the school open winter and summer, and have led the education committee to consider modifying the ordinary schools in the direction of the open-air school.

Borough of Newcastle-under-Lyme.—There are only five schools in the borough. Dr. John Fortune's report as school medical officer is incorporated with his report as medical officer of health. An inspection clinic is held daily. Only 33 per cent. of the defective cases obtain treatment, and this number includes cases of pediculosis. The figures do not seem to call for any congratulation of the borough.

County Borough of Bournemouth.—Dr. A. D. Edwards comments on the number of "delicate" children in the schools, which he associates with the character of the population attracted to Bournemouth. Ten such cases were taught in the open air during the year, with great benefit. The importance of abnormal restlessness as a possible early sign of rheumatism is commented upon. Of 10,000 children examined less than 6 per cent. have had growing pains. The report has an interesting psychological side to it.

County Borough of Brighton.—Brighton has 33 schools, including one for the mentally defective, and an average attendance of 16,417. Of 6318 children examined, 18·6 per cent. were in need of medical treatment, and a large number of dental cases appear to be excluded which in other localities would swell the percentage very largely. Teeth are considered "good or fair" if *not more than six teeth are carious.* The italics are our own and the figures are likely to mislead. The London County Council standard for normal is not more than three carious teeth, and dentists protest against this. Medical treatment is carried out by the senior school doctor, Dr. C. W. Hutt, and by a school dentist. Contagious skin diseases, refraction work, X ray work, and operations for removal of tonsils and adenoids are all dealt with.

County Borough of Eastbourne.—The birth-rate in Eastbourne is decreasing, so that the number of school children is less than that in previous years. In 27·2 per cent. of children inspected advice for defects was given, and in 80 per cent. treatment was secured. A school nurse follows up the inspection by visits to schools and homes, and treatment for defective vision, teeth, and ringworm (through a

"ringworm school") is given by the authority. The total number of children inspected was 2342. Out of 1140 boys, 291, or 25·53 per cent., were employed out of school hours. The cases are specially reported on, and show the need for a different method of "following up" such children. Even in flagrant cases reported by Dr. W. G. Willoughby the police did not prosecute.

City of Leeds.—Dr. Algernon E. L. Wear is assisted by 12 assistant medical officers and one school nurse, and his report is prefaced by a note from Mr. James Graham, secretary of education in the city, making out a strong case for support by the Treasury. The school nurse examined 20,378 children. A comparison of weights with boys in the Leeds Grammar School at age 12 gives: National Standard (presumably anthropometric committee), 76·7 lb.; Leeds Grammar School, 75·7 lb.; Municipal Secondary School, 73·5 lb.; and Elementary School, 70·5 lb. Jewish scholars approach most nearly to the country average. The corresponding heights are 54·9, 57·1, 55·7, and 53·8 inches.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 97 English and Welsh towns, with populations exceeding 50,000 persons at the last Census and whose aggregate population at the middle of this year is estimated at 18,120,059 persons, 8982 births and 5741 deaths were registered during the week ended Saturday, March 28th. The annual rate of mortality in these towns, which had been 15·8, 15·4, and 15·2 per 1000 in the three preceding weeks, rose to 16·5 per 1000 in the week under notice. During the 12 weeks of the March quarter the mean annual death-rate in these towns averaged 16·4, against 16·1 per 1000 in London during the same period. Among the several towns the death-rate in the week under review ranged from 5·1 in Edmonton, 6·9 in Ilford, 7·3 in Devonport, 7·5 in Eastbourne, and 8·0 in Grimsby, to 22·7 in Burnley, 23·3 in Preston, 23·5 in Stoke-on-Trent, 25·3 in Swansea, and 30·0 in West Bromwich.

The 5741 deaths from all causes were 455 in excess of the number in the previous week, and included 488 which were referred to the principal epidemic diseases, against numbers rising from 397 to 444 in the five preceding weeks. Of these 488 deaths, 162 resulted from whooping-cough, 140 from measles, 73 from diphtheria, 65 from infantile diarrhœal diseases, 33 from scarlet fever, and 15 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·4, against 1·3 per 1000 in each of the two preceding weeks. The deaths attributed to whooping-cough, which had steadily increased from 110 to 155 in the five preceding weeks, further rose to 162, and caused the highest annual death-rates of 1·3 in Leicester, 1·5 in Sheffield, 1·6 in Rotherham and in Middlesbrough, 1·7 in Exeter, in Bolton, and in Newport (Mon.), 1·9 in Barnsley, and 2·6 in Swansea. The deaths referred to measles, which had been 118, 113, and 107 in the three preceding weeks, rose to 140 in the week under notice; the highest annual death-rates from this disease were 1·4 in West Ham, in Ipswich, and in Cardiff, 1·6 in Bradford, 1·9 in Burnley, 2·3 in Nottingham and in West Bromwich, 2·9 in Leicester, and 3·9 in Swansea. The fatal cases of diphtheria, which had been 60, 67, and 51 in the three preceding weeks, rose to 73, and included 12 in London, 10 in Birmingham, 4 in Manchester, and 3 each in Cambridge, Liverpool, and South Shields. The deaths of infants (under 2 years) attributed to diarrhœa and enteritis, which had been 59, 74, and 73 in the three preceding weeks, declined to 65; of this number 17 were registered in London, 5 in Manchester, and 3 each in Birmingham, Liverpool, and Middlesbrough. The deaths referred to scarlet fever, which had been 34, 31, and 37 in the three preceding weeks, fell to 33 in the week under notice, and included 10 in London and 3 each in Liverpool, Salford, Preston, and Sheffield. The fatal cases of enteric fever, which had been 20, 13, and 21 in the three preceding weeks, fell to 15, of which 2 occurred in Gillingham.

The number of scarlet fever patients under treatment in the London Fever and the Metropolitan Asylums Hospitals, which had steadily decreased from 3599 to 3173 in the eight preceding weeks, had further declined to 3143 on March 28th; 347 new cases were admitted during the week, against 340, 320, and 319 in the three preceding weeks. These hospitals also contained at the end of the week under notice 1297 cases of diphtheria, 356 of whooping-cough, 134 of measles, and 77 of enteric fever, but not one of small-pox. The 1433 deaths from all causes in London were 205 in excess of the number in the previous week, and were equal to an annual death-rate of 16·5 per 1000. The deaths referred to diseases of the respiratory system, which had been 260, 223, and 250 in the three preceding weeks, further rose to 291 in the week under notice, but were 101 below the number recorded in the corresponding week of last year.

Of the 5741 deaths from all causes in the 97 towns, 182 were attributed to different forms of violence, and 448 were the subject of coroners' inquests. The causes of 37, or 0·6 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Manchester, Leeds, Bristol, West Ham, Bradford, Hull, and in 70 other smaller towns. Of the 37 uncertified causes of death, 11 were registered in Birmingham, 4 in Liverpool, 3 in Preston, and 2 in Middlesbrough.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns, with an aggregate population estimated at 2,293,200 persons at the middle of this year, 1204 births and 726 deaths were registered during the week ended Saturday, March 28th. The annual rate of mortality in these towns, which had been 16·6, 17·9, and 16·6 per 1000 in the three preceding weeks, further fell to 16·5 per 1000 in the week under notice. During the 12 weeks of the March quarter the mean annual death-rate in these Scotch towns averaged 18·2, against 16·4 per 1000 in the 97 large English towns. Among the several towns the annual death-rate in the week under notice ranged from 9·4 in Clydebank, 11·0 in Falkirk, and 11·1 in Leith, to 19·1 in Kilmarnock, 20·6 in Paisley, and 25·5 in Coatbridge.

The 726 deaths from all causes were 3 fewer than the number in the previous week, and included 78 which were referred to the principal epidemic diseases, against 77 and 66 in the two preceding weeks. Of these 78 deaths, 34 resulted from measles, 14 from infantile diarrhœal diseases, 11 from whooping-cough, 9 from scarlet fever, 9 from diphtheria, and 1 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases last week was equal to 1·8, against 1·4 per 1000 in the 97 large English towns. The deaths attributed to measles, which had been 36, 34, and 38 in the three preceding weeks, fell to 34 in the week under notice, and included 21 in Glasgow, 5 in Motherwell, 3 in Coatbridge, and 2 in Edinburgh. The deaths of infants (under 2 years) referred to diarrhœa and enteritis, which had been 14, 10, and 5 in the three preceding weeks, rose to 14, of which 9 were registered in Glasgow and 2 in Aberdeen. The fatal cases of whooping-cough, which had been 10, 8, and 10 in the three preceding weeks, were 11 in the week under notice, and included 5 in Glasgow, 3 in Coatbridge, and 2 in Paisley. The 9 deaths attributed to scarlet fever, of which 5 occurred in Glasgow, were equal to the average in the earlier weeks of the quarter. The deaths referred to diphtheria, which had been 5, 14, and 6 in the three preceding weeks, rose to 9, and included 4 in Glasgow and 3 in Aberdeen. The fatal case of enteric fever was registered in Glasgow.

The deaths referred to diseases of the respiratory system, which had been 126, 137, and 117 in the three preceding weeks, further declined to 111 in the week under notice; 31 deaths resulted from various forms of violence, against numbers declining from 32 to 22 in the three preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland, with an aggregate population estimated at 1,205,280 persons at the middle of this year, 667 births and 526 deaths were registered during the week ended Saturday, March 28th. The annual rate of mortality in these towns, which had been 19·2, 20·0, and 20·3 per 1000 in the three preceding weeks, further rose to 22·8 per 1000 in the week under notice. During the 12 weeks of the March quarter the mean annual death-rate in these towns averaged 21·5 per 1000; in the 97 large English towns the corresponding rate did not exceed 16·4, while in the 16 Scotch towns it was equal to 18·2 per 1000. The annual death-rate in the week under notice was equal to 27·2 in Dublin (against 16·5 in London and 16·1 in Glasgow), 19·6 in Belfast, 22·4 in Cork, 11·4 in Londonderry, 29·8 in Limerick, and 19·0 in Waterford; while in the 21 smaller towns the mean death-rate was equal to 21·7 per 1000.

The 526 deaths from all causes were 57 in excess of the number in the previous week, and included 67 which were referred to the principal epidemic diseases, against numbers increasing from 33 to 47 in the three preceding weeks. Of these 67 deaths, 34 resulted from measles, 12 from whooping-cough, 8 from infantile diarrhœal diseases, 6 from scarlet fever, 6 from diphtheria, and 1 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases in the week under notice was equal to 2·9 per 1000, against corresponding rates of 1·4 and 1·8 per 1000 in the English and Scotch towns respectively. The deaths attributed to measles, which had been 4, 8, and 16 in the three preceding weeks, further rose to 34, of which 27 were registered in Dublin and 5 in Lisburn. The deaths referred to whooping-cough, which had been 9, 4, and 11 in the three preceding weeks, were 12 in the week under

notice, and comprised 5 in Belfast, 3 in Dublin, 3 in Cork, and 1 in Limerick. The fatal cases of diarrhœa and enteritis (among infants under two years), which had been 12, 14, and 9 in the three preceding weeks, were 8 in the week under notice, and included 4 in Dublin and 2 in Belfast. The deaths attributed to scarlet fever, which had been 3, 4, and 6 in the three preceding weeks, were again 6, of which 2 occurred in Dublin and 2 in Belfast. The 6 deaths referred to diphtheria were 3 in excess of the average in the earlier weeks of the quarter, and included 4 in Dublin. The fatal case of enteric fever was recorded in Drogheda.

The deaths referred to diseases of the respiratory system, which had been 97, 104, and 105 in the three preceding weeks, further rose to 113 in the week under notice. Of the 526 deaths from all causes, 168, or 32 per cent., occurred in public institutions, and 4 resulted from various forms of violence. The causes of 14, or 2·7 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 97 large English towns the proportion of uncertified causes of death did not exceed 0·6 per cent.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments have been notified:—Fleet-Surgeons: J. C. G. Reed to the *Terror*, additional, for Bermuda Yard and Ireland Island; E. S. Tuck to the *Natal*; W. R. Trythall to the *Cæsar*; R. J. Mackeow to the *Black Prince*, on recommissioning; J. Menary to the *Lord Nelson* and for general staff duties; and E. G. E. O'Leary to the *Queen*. Staff-Surgeons: W. N. Blatchford to the R.N. Depôt, Deal, temporary; R. R. Horley to the *Sirius*, for medical charge on voyage out, and to the *Psyche*, on recommissioning; J. C. Bringan to the *Vernon*, temporary; C. A. G. Phipps to the *Pyramus*, on recommissioning; J. H. Lightfoot to the *Sirius*, for medical charge on voyage home; and E. R. L. Thomas to the *Cæsar*, temporary. Surgeons: R. J. G. Parnell to the *Victory*, additional, for disposal; H. H. Ormsby to the *Wildfire*, additional, for Sheerness Yard and Barracks; and G. B. Cockrem to the *Black Prince*, on recommissioning.

ARMY MEDICAL SERVICE.

Major William R. Blackwell, R.A.M.C., to be a Deputy Assistant Director-General at the War Office, vice M. H. G. Fell (dated April 1st, 1914).

ROYAL ARMY MEDICAL CORPS.

The undermentioned are restored to the establishment:—Supernumerary Lieutenant-Colonel Charles A. Young, vice F. J. Morgan (dated April 1st, 1914). Supernumerary Major Albert E. Hamerton, D.S.O. (dated March 28th, 1914). Supernumerary Lieutenants: William K. Morrison, Edgar Percival (dated April 1st, 1914), and Stanley J. Linzell (dated April 4th, 1914).

Colonel C. Birt has embarked for India.

Lieutenant-Colonel T. du B. Whaite has embarked for a tour of service in India. Lieutenant-Colonel F. J. Morgan has been appointed Senior Medical Officer at the Royal Arsenal, Woolwich. Lieutenant-Colonel T. B. Winter has been appointed to hold charge of the Military Hospital at Canterbury. Lieutenant-Colonel E. Eckersley has been appointed to hold charge of the Military Hospital at Quetta. Lieutenant-Colonel H. M. Adamson has been appointed to hold charge of the Military Hospital at Belgaum Cantonment.

Major R. H. Lloyd has been appointed Senior Medical Officer at the Military Hospital, Dagshai Cantonment. Major L. Addams-Williams has embarked for India. Major A. W. N. Bowen has been appointed to the Military Hospital at Belfast. Major C. E. Pollock has embarked for the Sierra Leone Protectorate. Major J. Hennessy has been appointed to hold charge of the Military Hospital at Ahmednagar Cantonment. Major J. W. H. Houghton has been appointed Specialist in Advanced Operative Surgery to the Military Hospital at Meerut Cantonment. Major A. G. Thompson has been appointed for duty on board the transport s.s. *Rohilla*, for Karachi from Southampton. Major H. W. K. Read has been appointed Senior Medical Officer at the Military Hospital, Rangoon Cantonment. Major H. D. Packer has embarked for India. Major E. W. Bliss has been appointed to the Eastern Command. Major D. Harvey has arrived home from the Nyasaland Protectorate. Major G. J. S. Archer has joined at Dorchester. Major A. H. Safford has taken up duty in the Irish Command. Major N. H. Ross has been appointed to the Military Hospital at Fyzabad. Major A. L. Scott has relinquished charge at Deepcut. Major W. S. Crosthwait has been transferred from Upper Topa, Murree Hills, to the Military Hospital at Ambala Cantonment. Major H. G. Pinches has arrived home from the Straits Settlements. Major J. H. Barbour has been appointed to the London District. Major E. V. Aylen has taken up duty in the Rawal Pindi Division.

Captain J. McKenzie has been transferred from the Military Hospital at Calcutta to Dinapore Cantonment. Captain E. M. Pennefather has been appointed to the Military Hospital at Multan Cantonment. Captain B. G. Patch has embarked for India. Captain J. F. Whelan has been appointed Deputy Assistant Director of Medical Services, Sanitary Branch, to the Poona Division of the Southern Army in India. Captain E. C. Phelan has joined at Barrackpore Cantonment. Captain H. C. Winckworth has embarked for a tour of service in India. Captain F. Casement has been appointed to the Scottish Command. Captain R. J. Cahill has been transferred from Athlone to Londonderry. Captain N. Low has joined at Colchester. Captain C. T. V. Benson has been granted leave of absence home from India for six months. Captain W. K. Beamen has been appointed to the Northern Command. Captain L. V. Thurston has been transferred from Bordon to Aldershot. Captain M. Keane has taken up duty at Calicut. Captain E. B. Lathbury has been appointed to the Irish Command. Captain J. A. Renshaw has been transferred from Secunderabad Cantonment to Wellington. Captain C. M. Nichol has joined at Alexandria. Captain J. F. Grant has been appointed Specialist in Electrical Science and Radiography to the Burma Division. Captain P. S. Stewart has been appointed to the Southern Command. Captain R. O. Kelly has been granted six months' leave of absence home from India. Captain F. T. Turner has been transferred to the Home Establishment from India. Captain A. T. Frost has joined at Lucknow Cantonment. Captain J. A. Bennett has been transferred from Newport to the Irish Command. Captain J. W. Houston has been appointed Deputy Assistant Director of Medical Services, Sanitary Branch, to the First (Peshawar) Division of the Northern Army in India. Captain W. Dunn has been appointed Senior Medical Officer, Military Hospital, Thayetmyo Cantonment.

Lieutenant T. E. Osmond has been transferred from Lucknow Cantonment to the Military Hospital at Ambala Cantonment. Lieutenant D. W. Bruce has taken up duty at Rawal Pindi Cantonment. Lieutenant J. Rowe has joined at Deepcut.

INDIAN MEDICAL SERVICE.

The King has approved the promotion of the following officers:—Colonel to be Surgeon-General: Robert William Steele Lyons (dated Jan. 10th, 1914). Lieutenant to be Captain: Thomas Arthur Hughes (dated 30th July, 1913).

The promotion of Major Herbert Henry George Knapp to the rank of Major is antedated from Jan. 29th, 1914, to July 29th, 1913.

The King has approved of the retirement of Lieutenant-Colonel Patrick Percy Kilkelly (dated March 1st, 1914).

Lieutenant-Colonel S. E. Prall, medical officer of health of the Port of Aden, has been granted leave of absence home on medical certificate. Lieutenant-Colonel the Hon. C. Mactaggart, C.I.E., has been appointed to officiate as Inspector-General of Civil Hospitals, Agra and Oudh, *pro tem.* Lieutenant-Colonel E. R. Parry has been appointed to officiate as Superintendent of the Alipore Central Jail. Lieutenant-Colonel A. E. Berry has been appointed Specialist in Ophthalmology to the Fifth (Mhow) Division.

Major A. King has been placed under orders for Bombay. Major W. D. Hayward, medical storekeeper to the Government of Madras, has been granted 20 months' leave of absence. Major J. L. Marjoribanks has been appointed Medical Officer of Health of the Port of Aden and Medical Officer to European General Hospital at Aden. Major T. Hunter has been appointed Civil Surgeon at Naini Tal. Major C. F. Marr has been appointed Medical Storekeeper to the Government of Madras. The services of Major W. G. Richards have been placed temporarily at the disposal of the Government of Madras. Major H. W. Illius has been appointed Civil Surgeon of the Second Class. The services of Major J. E. Clements have been placed permanently at the disposal of the Government of the United Provinces of Agra and Oudh for employment in the Jail Department.

Captain G. L. Duncan has been appointed to hold medical charge of the 90th Punjabi Regiment. Captain R. H. Lee has been appointed Superintendent of the Midnapore Central Jail. Captain W. S. J. Shaw has been appointed Superintendent of the Central Asylum at Yeravda. Captain R. D. Saigol has joined the Civil Medical Department in Burma. Captain C. L. Dunn has been appointed for special duty in connexion with the prevention of plague in the Punjab.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

The undermentioned Lieutenants are confirmed in their rank: George H. Haines, Howell G. Jones, and Henry C. Rook.

Cadet Andrew Robert Fausset Clarke, from the Edinburgh University Contingent, Officers Training Corps, to be Lieutenant (on probation) (dated Feb. 17th, 1914).

No. 18 Field Ambulance, Lieutenant-Colonel Fred D. Woolley resigns his commission (dated March 21st, 1914).

TERRITORIAL FORCE.

Royal Army Medical Corps.

4th London Field Ambulance, Royal Army Medical Corps: Lieutenant Herbert E. Middlebrooke resigns his commission (dated April 4th, 1914).

5th London Field Ambulance, Royal Army Medical Corps: John Edward Sandilands (late Captain, List of Sanitary Officers whose services will be available on mobilisation) to be Lieutenant (dated April 4th, 1914).

1st Lowland Field Ambulance, Royal Army Medical Corps: Robert Scott Taylor to be Lieutenant (dated Feb. 19th, 1914).

1st London (City of London) Sanitary Company, Royal Army Medical Corps: Lieutenant Joseph Grounds to be Captain (dated Dec. 4th, 1913).

Sanitary Officers whose services will be available on Mobilisation.—Captain John E. Sandilands resigns his commission (dated April 4th, 1914).

2nd London Clearing Hospital, Royal Army Medical Corps: Lieutenant-Colonel Charles Monk, Retired List (late of the Indian Medical Service), to be Lieutenant-Colonel (dated March 6th, 1914).

For Attachment to Units other than Medical Units.—Ernest Mannering Morris (late Captain, Unattached List for the Territorial Force) to be Lieutenant (dated March 20th, 1914).

Attached to Units other than Medical Units.—Captain William Ritchie is seconded under the conditions of paragraph 114 of the Territorial Force Regulations (dated Feb. 19th, 1914). Captain Arthur H. W. Hunt resigns his commission (dated April 4th, 1914).

TERRITORIAL FORCE RESERVE.

Royal Army Medical Corps.

Charles Gordon Watson (late Captain, List of Officers attached to Units other than Medical Units) to be Captain (dated Feb. 13th, 1914).

ROYAL NAVAL MEDICAL SERVICE EXAMINATION.

At the examination for appointments as Acting Surgeons for the Royal Naval Medical Service held on March 30th and 31st and April 1st and 2nd, 17 candidates were successful as follows:—

	Marks.
F. C. Hunot, Guy's Hospital	1806
H. B. Parker, London Hospital	1728
R. F. Quinton, London Hospital	1685
J. L. Priston, London Hospital	1665
M. J. Aitken, Glasgow University	1665
J. A. Maxwell, B.A., Trinity College, Dublin	1610
W. G. Thwaytes, Edinburgh University	1555
M. S. Moore, Trinity College, Dublin	1513
W. F. Beattie, Aberdeen University	1470
F. R. Fitzmaurice, University College, Cork	1433
C. E. Greeson, Aberdeen University	1408
T. J. O'Riordan, University College, Cork	1386
J. C. Kelly, Trinity College, Dublin	1375
H. W. Fitzroy-Williams, Victoria University, Manchester ...	1373
T. Hill, University College, Cork	1343
J. M. Horan, University College, Cork	1295
G. M. Graham, Edinburgh University	1233

The maximum number of marks obtainable is 2400.

THE SESSION AT HASLAR.

On the completion of the course of instruction for the winter entry of Acting Surgeons, Royal Navy, at Haslar, the prizes and commissions were distributed on April 2nd by the Medical Director-General of the Navy, Surgeon-General A. W. May, C.B., K.H.P. The following is a list of the successful candidates with the aggregate marks obtained at the London, Greenwich, and Haslar examinations:—

	Marks.		Marks.
A. R. Sharrod	3499	J. P. Blockley	3086
J. S. Elliott	3421	W. H. Murray	3052
A. J. Tonkinson	3420	G. H. Hayes	3036
T. J. Kilbride	3275	P. B. Wallis	2964
J. R. Haldane	3213	H. C. A. T. Cannon ...	2901
J. S. Harvey	3155	H. J. Hopps	2822

The gold medal was gained by Acting-Surgeon A. R. Sharrod, formerly of the London Hospital, and the silver medal by Acting-Surgeon J. S. Elliott, formerly of Edinburgh University. The three Admiralty prizes were respectively gained by Acting-Surgeon A. R. Sharrod, Group I. Haslar subjects; Acting-Surgeon T. J. Kilbride, Group II. Haslar subjects; and Acting-Surgeon A. J. Tonkinson, Greenwich subjects. Special commendations are as follows: Acting-Surgeon A. R. Sharrod, for obtaining highest marks at the Haslar examination, and for being first in the two Haslar groups; and Acting-Surgeons Sharrod, Elliott, and Wallis for zeal and ability shown in the performance of their ward duties. The Director-General, in presenting the prizes and commissions to the surgeons, told them that their duties would have to deal with the physical and moral welfare of the Navy. There was no doubt, he said, that not only the welfare but the very existence of this country depended on the Navy. It was common for people outside the service to imagine that efficiency consisted in the number of ships the country possessed, and to forget that behind the guns and in the ships there was the *personnel*. It was really upon the efficiency of the *personnel* that the power of the navy depended. Their work on shore would not much differ from that of the ordinary hospital work, for naval hospitals were in no way inferior in scientific attainments to the ordinary shore hospitals. Their life on board ship, however, would differ very much from anything they had either seen or contemplated in their life on shore. He thought it would be clear to them that it was their duty to prevent the *personnel* of the fleet from becoming ill rather than to cure men when they were ill, and to remember that they should place as many efficient men in the fighting line as possible. Prevention of illness must therefore be their aim on board ship. Continuing, the Director-General dwelt at some length upon the important question of ship ventilation, and in dealing with preparation for war urged the great importance of instructing the men in rendering first aid to the wounded, and reminded them that they would have to consider such matters as transporting the wounded down from the fighting tops and up from the stokeholds, as well as being prepared to carry out operations under very difficult circumstances.

At the next meeting of the Society of Medical Officers of Health, which will be held at 5 P.M. on Friday, April 17th, at 1, Upper Montague-street, Russell-square, W.C., a paper will be read by Dr. B. A. Peters, lecturer on infectious diseases, University of Bristol, on the Elimination of Cross Infection in Hospitals. As this is a question affecting all hospitals, and especially those for children, it is hoped that the meeting will be attended by members of the medical staffs of these institutions.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee 24 cases were considered and grants amounting to £267 voted to 22 of the applicants. The following is a summary of the cases relieved:—

Widow, aged 75, of M.R.C.S. Eng. Only income 5s. per week from Old Age Pension. Health very bad and failing sight. Voted £18.—Widow, aged 62, of M.D. Glasg. After husband's death endeavoured to support herself by taking boarders. In consequence of ill-health and lack of boarders unable to pay her way. Voted £12.—Orphan, aged 63, of M.D. St. And. Takes in paying guests, but illness and bad season cause of distress. Voted £10.—M.D. Q.U.I., aged 80. Private practice diminished and only a few panel patients. Voted £18.—Orphan of M.D. Edin., aged 68. Distress caused through the foreclosure of mortgages on leasehold property. No income at present. Relieved once £12. Voted £12.—Widow of M.D. Glasg., aged 56. Endeavours to earn a little by taking in a boarder. Suffering from chronic rheumatism. Children unable to help. Relieved seven times, £84. Voted £12.—Widow of M.D. Edin., aged 59. Has very indifferent health. Children only able to help slightly. Relieved four times, £44. Voted £12.—Orphan of M.R.C.S. Eng., aged 75. Unable to work in consequence of recent accident and old age. Just been elected an outpensioner of £26 per annum, and has an annuity of £9 15s. 6d. Relieved once, £10. Voted £10.—Orphan of M.R.C.S. Eng., aged 65. Endeavours to earn a little by taking in boarders, and just a little assistance from relatives. Cause of present distress, death of mother and sister, both of whom had small annuities. Relieved seven times, £84. Voted £12.—Orphan of M.R.C.S. Eng., aged 66. Income from investments only £20 per annum. Lives with sister whose income also is only £20. Distress caused by loss of investments and ill-health. Relieved twice, £24. Voted £18.—Orphan of M.R.C.S. Eng., aged 59. Has invalid mother to nurse. Mother lost income through building society frauds. A little assistance for invalid comforts from the Guild. Relieved twice, £24. Voted £12.—Orphans of M.R.C.S. Eng., aged 41 and 43. Endeavour to earn a living by letting rooms. Bad season cause of present distress. Relieved once, £10. Voted £10.—Widow of L.R.C.P. Edin., aged 56. Unable to earn anything in consequence of bad health. Receives a little help from the Guild. Relieved eight times, £108. Voted £12.—Orphan of M.R.C.S. Eng., aged 50. Difficulty in obtaining suitable employment through unsatisfactory health. Relieved twice, £27. Voted £12.—Widow of M.D. Glasg., aged 69. Income only £14 per annum allowed by friends and a little help in the winter from the Guild for coal. Health bad. Relieved once, £12. Voted £12.—Orphan of M.R.C.S. Eng., aged 63. Income only £5 per annum from a friend. Has very bad health and quite unable to do anything. Relieved five times, £60. Voted £12.—Orphan of L.R.C.P. Irel., aged 52. Endeavoured to support herself until two years ago, when health broke down. Income £39 per annum from relatives. Relieved once, £10. Voted £10.—Widow of M.R.C.S. Eng., aged 59. Health bad and cataract of left eye and quite blind in right eye. Children quite unable to help. Relieved three times, £30. Voted £10.—Orphan of M.R.C.S. Eng., aged 57. Only able to earn a small sum per week by needlework, and a relative helps to pay the rent. Health bad. Relieved 16 times, £190, and special £8. Voted £12.—Orphan of L.R.C.P. Lond., aged 67. Blindness and nervous breakdown. Only income £17 per annum from a society. Relieved nine time, £80. Voted £12.—Orphan of M.R.C.S. Eng., aged 46. Endeavours to support herself by letting rooms, but has been unsuccessful recently. Relieved three times, £30. Voted £12.—Widow of M.R.C.S. Eng., aged 66. Suffering from malignant growths of the breast. Endeavoured to earn a little by letting room. Children only able to help very slightly. Little help for nourishments from the Guild. Relieved 13 times, £166. Voted £10.

Contributions may be sent to the honorary treasurer, Dr. Samuel West, 11, Chandos-street, Cavendish-square, London, W.

MEDICAL PRACTICE UNDER THE INSURANCE ACT.

(BY OUR SPECIAL COMMISSIONER.)

(*Continued from p. 996.*)

XLII.—LONDON: FAVOURABLE VIEWS OF THE ACT.

IT now became my task to call on various practitioners who are on the panel and who approve of the Insurance Act. My first visit was to a popular practitioner living in the Fulham-road, who expressed himself as being quite satisfied. He had some 800 insured persons on his list and paid only about three visits a day. Out of 24 visits paid on the day of my call only two were to panel patients. Some came to his surgery from long distances when they were really too ill to go out, and he had to hasten them home and to bed. Nor did he get the numerous night calls he had feared; but very trivial cases did come to his surgery, people who complained that their corns hurt them or that they had warts. But there were, he said, in Fulham some panel doctors with too long lists. One of them was credited with a list exceeding 4000, and another 2500. Patients had used their right under the Act to put themselves on the list of practitioners whom they desired to see, and thus it was that some insured persons, whom he did not know before, had come to him. Nor had he found that his panel work interfered with his private practice. On the contrary, it had increased the number of his private patients, for now he was attending, and for the usual fees, the dependents of the insured.

It would be a mistake, however, to conclude from the above optimistic view that because a doctor is on the panel and approves, in a general sense, of the Insurance Act, he is therefore quite at ease and quite satisfied. This is far from being the case, for numerous improvements are suggested and many apprehensions entertained.

The Group System.

In quite a different part of the metropolis, in Lewisham, I saw a well-known and popular panel doctor who anticipated the possibility of a State Medical Service as a solution of the problem of medical benefit. In the meanwhile, and though he did not use such terms as collective or coöperative effort, he strongly advocated the organisation of panel work in the "group" form. To him it was wasteful and injurious to turn private dwellings into surgeries. In rural districts, where the population was scattered and practitioners lived several miles away from each other, this could not well be avoided. But in densely populated industrial centres, in London especially, it was a scandalous waste of opportunity and of resources for every panel doctor to keep up a petty little surgery of his own. Panel doctors, he urged, should form groups numbering at least six and preferably more. Jointly these panel doctors should hire a house, or, if it be possible, they should have a building planned and constructed specially for their purpose. Here there would be one large well-appointed waiting room, and as many consulting rooms in communication with the waiting room as there were panel doctors grouped together. Then there would be other rooms for electric treatment, bacteriological examinations, X rays, &c.; and thus jointly many facilities could be secured that no one panel doctor could by himself afford to supply. Above all, there would be the advantage of rendering coöperation between the panel doctors both natural and easy. Incidentally this would tend to reduce the prevalence of malingering, and the panel doctors might secure for themselves much greater freedom by agreeing to deputise for each other. The great object to strive for at present was the abolition of the spirit of competition. Under the capitation system this was rendered much more easy of attainment. Indeed, he went on to say, the Insurance Act has already established a State Medical Service, at least as far as the patient is concerned, if this was not so much so in regard to the doctor. The idea of service to the State had got to take the place of the old notion of competition. The Insurance Act was not intended to facilitate "bottle of medicine practice." It was meant to bring into existence a great educational force. The panel doctor was given an independent position with a comparatively safe income, so that he might teach the ignorant masses that a bottle of medicine will not cure disease. They had to teach sanitation. This could be done better in medical centres, such as might be established by grouping panel doctors together, than in small private surgeries. If a doctor speaking in his own small, ill-ventilated, dingy surgery told his patient he must have exercise and more air, the patient would go away and tell his friends that the doctor was no good because he had given him no medicine. But if such lessons were enforced by several doctors grouped in a centre where an object-lesson of cleanliness and ventilation was given at the same time they would be better appreciated.

Unsuitable Surgeries and Complaints against Panel Doctors.

At present, in this part of the south-east of London, there is a panel doctor who examines his patients in the waiting-room before all the other patients. It is true that this is quite an exceptional case, but nevertheless, and though he has no place to see his patients in private, he has quite a long list of poor people who have selected him as their panel doctor. In other parts of London similar scandalous conditions obtain here and there. A section of the population is so down-trodden—poor, wretched people—so inured to rough treatment, that they do not resent lack of proper accommodation. On several occasions my attention has been drawn to a notorious case of this sort on the Surrey side in a thickly populated district. The question is, How long will it be before these forlorn sections of the poor discover that they are badly treated and that better treatment is within their reach if they will avail themselves of the opportunities the Act gives them? Also, and on the other side, better men will come on to the panel when they see that a competence can be assured them, and this, too, without having to engage in any acute phase of competition against fellow practitioners.

As a member of the Medical Service Sub-Committee formed by the London Insurance Committee, my Lewisham informant explained he was in a position to inform me that the greater number of complaints made against panel doctors came from the poorer districts. This was natural, because it was just in such districts—Hoxton and Bethnal Green, for instance—that the panels were understaffed. The patients who were most apt to complain in all districts, and perhaps more especially in the better class districts, were those whose doctor has not gone on the panel. They had thus been obliged to

send for a panel doctor whom they had never seen before; and this sort of compulsion was apt to make them critical. The general complaint was that the doctor did not come quickly enough, especially if asked to call in the afternoon or evening. But it must be remembered that in a crowded neighbourhood a panel doctor with a large list might well be detained in his surgery till ten in the evening.

The Good that Grumbling Does.

All this grumbling, whether justified or not, is probably doing good. The grumblers will help to obtain in time a recognition of the fact that the panel patient is extraordinarily protected by publicity. Therefore in time the Act will give a guarantee of good service, because it is a public service and a controlled service. But for the present, at least in many instances, the control is inefficacious.

As far as his own patients were concerned my informant had but little complaint to make. He had more than 1000 insured persons on his list, and many of them called on him as little as they possibly could. Of course, like all his colleagues, he was annoyed by trivial cases, but he did not find that the working class bothered him in that manner. It was the clerk earning 35*s*. a week who rushed off to the doctor on the slightest provocation. And by the side of the trivial cases he had work of the greatest scientific interest. He had one obscure case in particular which he would gladly have gone from one end of London to the other to see.

Improved Conditions of Practice under the Act.

I inquired at this point whether the Insurance Act could be utilised to check the spread of venereal disease. The reply was that so many practitioners stood in terror of the "unco' guid" that they dared not advise as to what precautionary or prophylactic measures, other than moral restraint, could be taken. But the Act would be, he maintained, a powerful instrument for the general prevention of sickness. When things had had time to settle down panel doctors would be less timid; they would think less and less about losing patients. A conscientious doctor would not lose more than a patient here and there, and under the capitation system this amounted to a very small sum. It did not affect seriously the much greater security of income now enjoyed. Of course, under the contract system there was a danger that some practitioners might drift into a groove, finding little to encourage them to improve their methods, and resting content to rub along in the easiest way. Would the glare of publicity be sufficient to prevent such neglect, or would the State institute compulsory post-graduate courses so that medical men in its service might be forced to keep abreast with the march of science?

Then there was also the question of private practice. In the case of this informant again the going on to the panel had not interfered in the least with his private practice. On the contrary, insured persons on his list had, on several occasions, introduced him to private patients. His private practice had so increased, and his position was so much improved after working for one year on the panel, that he had just been able to exchange his bicycle for a new motor-car. Taking everything together, the outlook seemed encouraging to him. There was difficulty in some parts of London. Even before the Act there were not doctors enough in certain districts; now it should be easier to induce practitioners to settle in those districts. When all the advantages were better known, a better supply of doctors would follow. But such a sweeping change as that brought about by the Insurance Act required several years to produce its full effects. Such, at any rate, were the principal opinions and impressions that were set before me by friends of the panel system during my visit to Lewisham.

(To be continued.)

MOTORING NOTES.

(FROM A SPECIAL CORRESPONDENT.)

The Studebaker Two-seater Cabriolet.

To many people an American car denotes a cheap one which perhaps goes well and climbs hills excellently, but probably not for long. In fact, recently, when discussing with a colleague the purchase of such a car, he said: "They are like some razors: not made to shave, only to sell." As a consequence of this and other conversations and inquiries, and also because the car in question seemed to possess qualities that adapted it well to the needs of a doctor, I spent a day in thoroughly examining and testing a Studebaker cabriolet, concerning which I see that a correspondent of THE LANCET has recently made inquiries.[1] The cylinders are cast *en bloc*, and have a bore of 3½ inches and a stroke of 5 inches. The valves are all on the left side, and are enclosed by a plate which is accessible and easily removable. The valves themselves are drop-forged with their stems electrically welded to the head. The operating push-rods are adjustable. The pistons are of grey iron with polished heads, and are fitted with three piston rings above the gudgeon pin. The connecting rods are of drop-forged steel. The gudgeon pin bearing is of phosphor bronze. The big ends are lined with cast babbitt metal, and packing pieces are provided for adjustment. The crank shaft is of chrome nickel steel, and all the bearing surfaces are ground to micrometrical exactness. Lubrication is by means of a plunger pump driven direct from the cam-shaft. A supply of oil is carried in a sump in the bottom of the crank case, and from here the pump forces it into four troughs, one under each connecting-rod. There is also a sight gauge-glass on the dashboard, from which oil is led to the timing gears at the front of the engine. This gauge serves as an indication that the pump is working correctly. An oil-level indicator fitted to the side of the crank case, which is easily visible, shows accurately at all times the quantity of oil in the sump. Ignition is by means of a single coil mounted on the off-side of the engine, and the current is derived from accumulators which are kept fully charged by the dynamo, and these also supply current for the lamps and the engine-starting electric motor. A dry battery is connected to the ignition coil as a standby in case of derangement of the main system. Cooling is by means of a gilled tube radiator with a fan behind it, and a large centrifugal pump. The carburetter is a Schebler, and a regulator is placed on the dashboard enabling the adjustment of the air supply to be varied according to climatic conditions. The clutch is a leather-faced cone, which, as a matter of fact, is probably as simple and as satisfactory as any. Flat steel springs are fitted underneath the leather to facilitate easy engagement. The transmission is by propeller shaft with two efficient universal joints. Three forward speeds and one reverse are provided, all operated by a single lever on the gate change system. The housing of the rear axle also contains the gearbox. The control is by throttle and spark levers on the top of the steering wheel, with a foot accelerator situated between the clutch and foot brake pedals. The brakes all act on the rear hubs—one set being by external contracting lined steel bands acting on steel drums, whilst the other set is by internal expanding shoes acting on the same drums. The electric self-starter is fitted on the off-side of the engine, and is connected, by means of a suitable reduction gear and

[1] THE LANCET, April 4th, p. 1014.

chain, to a chain sprocket and roller clutch fitted on the front end of the crank-shaft. The starting motor and the chain are stationary, except when in use for the actual purpose of starting the engine.

I had no doubt that the car would go, but I wanted evidence. I therefore suggested to the representative of the company that I help myself from their store to various parts for examination as to quality and machining. They agreed with pleasure. I found their depôt a perfect hive of industry, some hundreds of cars being in various stages of preparation for delivery. Here I saw the tuning-up and testing of the products of the firm. It is in the thoroughness with which this is done that the difference exists between the best and the mediocre car—at least, from the user's point of view. The tester represents, or should represent, an aggressive, expert and discontented purchaser. At the depôt each detail is separately considered, so that the car leaves with its engine up to standard power, quiet and fast on the level, cool in traffic and on speed, and with the carburetter consuming a minimum amount of petrol. In the store I picked out a differential star, four different spider pinions, a connecting rod, the two parts of a gearbox through shaft, each from different piles, some gear pinions, a shackle pin, cam-shaft, and one of the universal joints. These I took with me to Woolwich, where I examined them with an engineering friend. His opinion was that the material was good and the machining excellent, and though in unimportant parts the pieces were rough the bearing surface and important parts were well finished and undoubtedly, as stated by the makers, ground to micrometrical exactness. All the spider pinions, though picked out indiscriminately from a stack of many hundreds, were a perfect fit on the star. The through shaft parts were also a good fit, the bush for the bearing between the two fitting perfectly; the connexion between the two portions is by a three-point dog clutch. Some might prefer an internal tooth pinion, but on many cars this method is adopted, and it is quite an accepted practice. From Woolwich I took the car and tested it over some Kentish hills. I found the engine starter worked well, the engine gave all the power necessary, and that without noise or fuss of any kind; the springing was good, and even over rough roads there was little hopping or swerving, but of course a shock absorber would have been an improvement. Although three speeds are provided, they are requisite only for starting and for steep climbs. As a rule, from a crawl to well over the legal limit, the top speed obtained all the time. In traffic the control was excellent, and of this I had proof in Piccadilly and over that unpleasant crossing, the Elephant and Castle. The gear changing is easy, and immediately on taking the steering wheel and opening the throttle the sweetness with which the clutch takes up the drive was noted. The way, too, the car travelled up a hill on top gear made driving a pleasure. The brakes were tested in both directions on a hill of 1 in 4·8, and gave ample proof that either is sufficient for any emergency. The car is comfortable to drive, and clutch, brake, and throttle pedals are well situated, though personally I prefer the latter on the left instead of between the two former. The body is comfortable, the upholstering good, and entry can be made on either side.

There is little doubt that this car will become popular with the medical profession, especially as, considering the quality, the price is reasonable.

Motor Engineering Pupils and Scholarships.

The Daimler Company, Limited, of Coventry, have sent to all the technical schools and colleges throughout the United Kingdom inviting pupils in their works. Their scheme seems to be a very comprehensive one, and planned on broad and generous lines. It is necessary for candidates to show evidence of some scientific training. Under their new system it is possible for a pupil to win a scholarship if his work reaches a sufficiently high standard.

The Rapid Valve Truer.

There is no question that the efficiency of an internal combustion engine is largely dependent on its compression, and therefore any leakage past the valves reduces this efficiency. As a rule, grinding-in suffices to make a valve "bed" correctly on its seat. As a matter of fact, a large number of owner-drivers are rather too keen on grinding-in their valves, but the minority who postpone this procedure too long may find that the badly worn valve face requires an enormous amount of grinding, and may even call for the aid of a lathe. It is in these cases that the rapid valve truer will be found useful. The instrument consists of a cutter screwed into a casing, which latter has inside it a double-coned part and a single-coned part, forming ball races for two sets of balls. These hold the valve stem concentrically true with the cutter, so that the valve face beds evenly when being trued up. The cones are adjustable, and one cutter will true a large number of valves. The method is simple. When the instrument was tested by the writer on a ten-year-old badly pitted valve found on a scrap heap the resulting finish was equal to that obtained on a lathe with skilled workmanship. The device is sold by Messrs. Brown Bros., Limited, of Great Eastern-street, London.

Boilerine Radiator Tablets.

We have submitted these tablets to laboratory examination and find that the claims made in regard to their property of preventing lime deposit or of dissolving it when formed are substantiated. By their use the water in the radiator, and therefore the tubes, are kept clean, the circulation is unimpeded, the radiation is maintained at a maximum, and the risk of choking the channels avoided. Analysis disclosed the ingredients which have no corrosive action on metal when used in the quantity directed, which is, of course, based upon the degree of hardness of the water. For London water two tablets to the gallon are sufficient. A soluble combination of the lime salts of the water with the ingredients of the tablet is formed which has negative properties in regard to metal. The makers are Messrs. Boilerine, Limited, 885A to 897, Old Kent-road, London, S.E.

Home and Foreign Notes.

(FROM OUR OWN CORRESPONDENTS.)

MANCHESTER.

The Ways of Women Inebriates.

IN the annual report of the Lancashire Inebriates Reformatory at Langho, near Blackburn, Dr. F. A. Gill, the medical superintendent, states that 60 per cent. of all committed were mentally defective. Commenting upon the traits of women inebriates, he thinks the chief features of this class are defective intelligence, quarrelsome disposition, perverted or absent moral sense, and lack of control over impulses. Defective intelligence is expressed chiefly by a condition of general apathy, lack of energy, faulty memory, and little power of thought or judgment. "Their sense of honour," he says, "is simply non-existent. A lie is a matter of convenience, truth or untruth is a matter of indifference so long as it will enable them to attain their ends. Morality has no meaning. ..... Some of them nearly live a bovine existence, eating, dodging their work, and not infrequently falling asleep over such work as they do. When punished by confinement to cells they are perfectly content to do absolutely nothing."

Diseases in Infancy and Childhood: Boiling of Milk and Tuberculosis.

Dr. Ralph Vincent gave recently an address to the Manchester Sanitary Association on the prevalence of disease amongst babies and young children, in which he said that many of the diseases of children, including tuberculosis, were caused or led up to by inadequate or improper food. He did not think there was much, he said, in the cry about the ignorance of mothers. The great cause of the prevalence of disease in the young was the absence of food adequate for the requirements of the infant. Mothers should be encouraged to breast-feed their infants, as milk was not in its natural condition when it was boiled. He repeated the

view that boiling destroyed a vital property of milk, and declared himself able to exclude cow's milk as a cause of tuberculosis in a great majority of cases.

Obsolete School Buildings.

Lord Sheffield on April 3rd, as President of the Manchester and Salford District Education Association, referred to the large number of defective school buildings in Manchester and Salford. According to reliable statements there are far more than a score of schools with an average daily attendance of 20,000 children which are utterly unsuitable for their purpose, and which have been repeatedly pronounced to be defective by the Board of Education. Most of these were built before the Education Act of 1870. Since then there has been a complete reformation in the construction, lighting, and other hygienic requirements of school buildings.

Charitable Bequests.

Miss Elizabeth Catherine Wagstaffe, of Cheetham Hill, Manchester, among other legacies, bequeathed £300 to the Clinical Hospital, Manchester; £500 to the Salford Royal Hospital; and £500 to the Cancer Pavilion, Manchester.

April 7th.

BRISTOL AND WESTERN COUNTIES.

Farm Colony for the Feeble-minded.

A SHORT time ago Mr. H. H. Wills offered a farm, worth about £7000, at Bishop's Lydeard, near Taunton, for use as a farm colony for the feeble-minded of Bristol and Somerset, on condition that the sum of £14,000, for the erection of buildings, was collected by March 20th. There is still a deficit of £4000, but Mr. Wills has extended his time limit to May 31st, so that the necessary sum may be raised if possible. A series of meetings is to be arranged to make the need of such an institution more widely known. It is hoped that the cost of upkeep will be largely covered by grants from local governing bodies and by the produce of the farm itself.

The Late Surgeon-Lieutenant-Colonel Smith.

The death of Surgeon-Lieutenant-Colonel Samuel Smith, in his seventy-ninth year, removes a familiar figure from the streets of Bristol. He had been in practice here for many years, and for a considerable time held the office of battalion surgeon to the 1st Gloucester Volunteer Royal Engineers, also receiving a commission in the Army Medical Reserve. After 23 years' service he retired with the Victorian Decoration and permission to retain the rank and to wear the uniform of Surgeon-Lieutenant-Colonel. He was a Fellow of the Royal Meteorological Society and of other learned societies. In spite of his advanced age he was very active, and remained in practice until the onset of his last illness.

Consulting Medical and Surgical Officers to the Bristol Poor-law Institutions.

The Bristol board of guardians has decided to follow the example of other large cities by appointing a physician and a surgeon respectively, at a salary of £100 a year each, to act in a consultative capacity to its workhouses and infirmaries. The conditions of service have not yet been definitely stated, and the appointments have yet to be advertised; but there is little doubt that if the details are satisfactorily arranged these posts will add greatly to the efficiency of the local Poor-law medical service.

Hospital Sunday Fund at Bristol.

At present the sum of £1969 has been received in connexion with the Lord Mayor of Bristol's Hospital Sunday Fund. This is slightly in excess of the total for 1913, which amounted to £1957, and as there are still over 30 collections to be sent in it is anticipated that this year's total will exceed £2000.

Bristol Board of Guardians.

The Bristol board of guardians at its meeting last week appointed Mr. R. H. Norgate, L.R.C.P. Lond., M.R.C.S., to be the medical superintendent of the new workhouse infirmary at Southmead, at a salary of £400 per annum. Mr. Norgate has been resident medical officer of the Stapleton workhouse infirmary of the Bristol union for the past 19 years. The guardians also decided to appoint two assistant medical officers.

The Local Government Board and Whole-time Medical Officers of Health.

The Local Government Board recently suggested to the Taunton rural district council and to the Wellington urban council that owing to the resignations of their respective medical officers of health they should combine and appoint a whole-time officer to the post. Last week these authorities, together with representatives of the Taunton board of guardians, discussed the matter fully, and eventually resolved unanimously to recommend the appointment of a whole-time medical officer who should act as medical officer for the St. James's district of Taunton, medical officer of health for the Taunton rural district and the Wellington urban district, and hold also the posts of medical officer to the Taunton Isolation Hospital and the Children's Homes at Taunton. The salary to be £450 per annum.

A Medical Certificate at Plymouth.

At the Plymouth county court on March 20th, before his honour Judge Lush-Wilson, K.C., a man was summoned for non-payment of rent. The defendant suffered from pulmonary tuberculosis, and his wife produced a medical certificate to the effect that he was unable to work through illness. The practitioner who gave the certificate stated that he had put no date on it. His honour said it was a sad case, but the woman appeared to have put a date upon a certificate which had been previously given to her husband so as to make it suitable for the present case, and to have sworn that her husband was ill in bed, although he was then at work at the dockyard. His honour said that he must lay the facts before the Public Prosecutor and leave him to decide upon the course to be adopted.

April 7th.

IRELAND.

Medical Officers of Health in Ireland.

IN answer to a question in the House of Commons last week, Mr. Birrell, Chief Secretary for Ireland, stated that there were 903 medical officers of health, including medical superintendent officers of health and consulting sanitary officers, employed by local authorities in Ireland. Of these, two were full-time officers, and they were paid salaries of £500 a year or over. Mr. Birrell's answer is inaccurate, as there is only one whole-time medical officer of health in Ireland, the medical officer of Belfast. The information would have been more complete if Mr. Birrell had added that the salary of a medical officer of health in Ireland varies from £5 to £25 a year. THE LANCET recently (March 28th, 1914, p. 924) gave particulars of the

obstructions put by the responsible Government department in the way of a local authority which wished to make the office of medical officer of health effective.

Royal College of Physicians of Ireland.

At the meeting of President and Fellows last week Sir Arthur Chance, F.R.C.S. Irel., was elected an Honorary Fellow of the College. The honour is a recognition of gratitude to Sir Arthur Chance for his services to the College while representative of the sister College on the General Medical Council. Sir Arthur Chance is a past President of the Royal College of Surgeons in Ireland, and is surgeon to the Mater Misericordiæ Hospital. At the same meeting Dr. Bethel A. H. Solomons was elected a Fellow.

High Mortality in Dublin.

The death-rate of Dublin has been abnormally high during the past few weeks, even for Dublin.

Scarlet Fever in Belfast.

The scarlet fever epidemic—which has now raged in Belfast since October, 1909—is slowly wearing itself out, for the report of the health of the city during the period between Feb. 15th and March 14th, presented at a meeting of the city council held on April 1st, shows that 132 cases were notified.

A Rise in Salary.

The salary of the medical officer of health of Belfast has been raised from £800 to £900 by two annual increments.

The National Insurance Act in Belfast.

At a meeting of the Belfast Trades Council on April 2nd a resolution was unanimously passed expressing the opinion that the present panel system of obtaining medical certificates has proved a complete failure both in regard to the interests of the insured persons and of the Approved Societies, and calling upon the Chancellor of the Exchequer and the Irish Insurance Commissioners to institute a State Medical Service for the insured persons, failing which a State Medical Service should be initiated for the purpose of issuing medical certificates to insured persons when ill. At a meeting of the Belfast Local Medical Committee held on March 31st Mr. R. J. Johnstone was elected chairman, in place of Sir John Byers, who, through pressure of work, has been obliged to resign. A resolution was unanimously passed thanking Sir John Byers for his services, and deeply regretting his inability to continue in office.

The late Colonel Frederick S. Heuston, A.M.S.

I regret to announce the death of Lieutenant-Colonel F. S. Heuston, at Greystones, co. Wicklow. He had a distinguished career in the Army Medical Service, from which he retired two years ago. A Tipperary man by birth, he received his medical education at the Carmichael school in Dublin, and took the Fellowship of the Royal College of Surgeons. He entered the army in 1884, and saw much active service, beginning with the Black Mountain Expedition in 1888. In 1894 he was seconded for service with the Chinese Government, and took part in the opening of the Imperial Medical College at Tientsin, of which he was for some time president. He served in the Chino-Japanese war, and was decorated by the Chinese Emperor, while he was also a C.M.G. In the South African war he was twice mentioned in dispatches. In his younger days Heuston played for the Irish International Rugby team in three successive years, 1881, 1882, and 1883. He was a brother of Mr. Francis T. Heuston, surgeon to the Adelaide Hospital, Dublin, to whom the sympathy of the profession will be extended.

April 7th.

PARIS.

The Proper Hours for Meals.

Professor Bergonié, of Bordeaux, has invented an electric bed in which the passage of the current through the body of the subject sets up organic combustions similar to those brought on by muscular exercise and leads to reduction of obesity. Professor d'Arsonval has recently communicated to the Académie des Sciences the results of M. Bergonié's studies by means thereof on the energy of the organism. By studying closely the hourly variations of energy in a subject whose mode of life is known and regular and whose weight is constant at the same hours, it becomes possible to construct a curve of the needs of energy of the subject for every hour. It is known that 80 per cent. of the energy is taken up in maintaining the body heat, and that the calls on this energy for heat production are in inverse proportion to the temperature of the surrounding medium. In civilisation, where activity is prolonged far beyond sundown and for a part of the night, the draught upon energy at these hours is considerable. On the other hand, between 10 P.M. and 6 A.M., during sleep, the heat demand is *nil*, and energy is stored afresh for use with great intensity on waking. M. Bergonié concludes that the hours at which it is suitable to take into the system by means of food the sources of this energy must be regulated by these considerations; but it is necessary to take note of the period that elapses between the time of taking food and that at which its digestion and assimilation have set free all the utilisable energy, just as in the electrical power house the engineer must calculate the time that elapses between the coaling of the fire and the augmentation of the voltage in the circuit. M. Bergonié has discovered that the least suitable hours for meals are between noon and 1 P.M. and between 7 and 8 P.M.—that is to say, precisely those hours which in Europe modern usage has set apart to meals. It is true that these meal hours have varied considerably down the ages, and that in the last century they were earlier than at present. According to M. Bergonié the meal hours that a rational hygiene would prescribe would be as follows: the principal meal of the day should be taken at 7.30 A.M. or as soon after as possible, so as to obtain all the necessary energy for the day's work and to restore the liver, emptied by the night's abstinence. A second meal of 300 to 400 calories, for which a luncheon of milk, sugar, and cakes would suffice, should be taken about 4 P.M. Finally, a third light repast of 700 to 800 calories at 8.30 or 9 P.M. would complete the alimentary *régime*. M. Bergonié adds that in a family which has accepted his views this *régime* has been followed for six years, and has furnished excellent results as regards the general health of all the members. These views have aroused much surprise in France; in England it would be necessary, in conforming with this *régime*, to have breakfast a little earlier and of the old-fashioned solid sort, to reduce luncheon to a sort of tea, and to postpone and reduce the evening meal.

Amœbic Dysentery in France.

A communication by Professor Landouzy to the Académie de Médecine suggests that there is a gradual acclimatisation of amœbic dysentery in France. Already 14 cases are known in persons who have never been out of France, and among these have occurred seven hepatic abscesses and five deaths. Four of the victims had associated with colonials in France and appear to have been directly infected, but the others had had no such exposure. Professor Landouzy reported the case of a mariner at the Hôpital Laennec, aged 38, who had always served on boats plying in the north of France. There was no suspicion of dysentery. The patient was cachectic, with an enlarged liver, and had suffered for months from vomiting and diarrhœa (not bloody). Chemical reagents showed a feeble hæmoglobin reaction however. Hepatic cancer was diagnosed, but at the necropsy made 24 hours after death an enormous hepatic abscess was discovered with the characteristic intestinal ulcerations of dysentery, both abscess and ulcerations showing amœbæ. Inoculation into a cat proved negative. Professor Landouzy reported another case, that of a man who had spent a year in Morocco and returned without any sign of dysentery, though he had lost flesh and was easily fatigued. A little later he sustained in an automobile accident a severe contusion of the liver, and three months afterwards a sharp febrile attack with a large abscess of the liver containing amœbæ ensued. This man was an unwitting germ carrier. From these observations Professor Landouzy presages an indigenous amœbiasis which is gradually becoming acclimatised and is giving rise to numerous germ carriers, in whom the disease may break out on the occasion of a traumatism, and who especially may be unconscious and unrecognised conveyers of it. The special danger is that the medical man is apt to think of dysentery only in connexion with patients returned from the colonies. Professor Landouzy suggests that special search be made for the amœba in all cases of rebellious diarrhœa of unexplained origin and accompanied by cachexia, even though there may be no blood in the stools and no hepatic symptoms. Moreover, returned colonials who have attacks of dysentery must no longer be regarded as incapable of spreading the disease, but the same precautions as are used in the colonies must be rigorously insisted on in their case. M. Vaillard, president of the Conseil Supérieur de Santé de l'Armée, while admitting the possibility of contagion through returned colonials, protested against exaggerated fears. Although the numbers of returned soldiers and civilians during the past 30 years had greatly increased, the number of cases had not increased, and the discovery of a really specific remedy in emetine now rendered possible the sure sterilisation of such cases. In this view he was supported by M. Bertrand, director of the Service de Santé of the Navy.

Hospital Sanitation.

Considerable attention has been directed to a recent article in the *Presse Médicale* by Dr. Raoul Brunon, physician to the General Hospital at Rouen and director of the medical school there. He alludes to the millions spent in Paris by the Assistance Publique for the construction of new hospitals, no expense having been spared in making them comfortable to the verge of luxury, and insists that no improvement in hospital statistics can be looked for unless regulations such as those which have sufficed to render the oldest hospital buildings sanitary are adopted generally. These necessary conditions are adequate floor space for the beds, continuous ventilation of the wards, and the necessary minute personal attention to each patient many times a day. Even the newer hospitals, if lack of room causes overcrowding, too close proximity of beds, and insufficient air space, or if a deficiency in the *personnel* precludes the proper washing of individual patients and the daily disinfection of the floors, walls, and furniture, will show statistics as unsatisfactory as those of the older buildings. When a town undertakes the construction of costly hospitals they cannot for the same expenditure provide the same number of beds for the community. Overcrowding soon occurs and with it insanitary conditions. In an old hospital if the walls and floors are washed every day, if the wards are frequently emptied and disinfected and are always properly ventilated, there will be less infectiousness present. M. Brunon instances the hospital mortality from broncho-pneumonia in whooping-cough and measles as due to contagion of the hospital wards. In the old General Hospital of Rouen, under his direction, not a single case of death has occurred from measles or whooping-cough for many years, thanks to rigorous asepsis and ventilation, while at Paris the mortality from measles is still severe. In 1887 the mortality from measles exceeded 40 per cent. at Paris, in 1898 the mortality was such that the Chef de Service demanded the closing of the whooping-cough wards after 103 children had died therein in ten months. In 1899 the mortality from broncho-pneumonia after measles was still about 30 per cent. It is to-day 14 per cent. at the Enfantes Malades, 12 per cent. at the Trousseau, and 9 per cent. at the Hôpital des Enfantes Assistés.

April 6th.

VIENNA.

Professor Wenkebach appointed Successor to Professor von Noorden.

Professor Frederick Wenkebach, the director of the medical clinic of Strassburg, having been invited by the Austrian Ministry of Education to become the successor of Professor von Noorden in the first medical clinic of Vienna, has accepted the offer thus made to him. As already mentioned in one of my letters, Professor von Noorden was induced by reasons of a personal nature to resign his post and to relinquish his clinic, a first-rate and completely modern institute. Professor von Noorden has founded in Vienna an excellent institute for the investigation of the processes of metabolism, and his successor, who is 50 years of age, and a Dutchman by birth, has done a great deal of work in this direction, so that the departure of Professor von Noorden will be compensated to some extent. Professor von Wenkebach will take over the clinic in the month of May in the coming summer term. He was recommended by the senate of the university "*primo et unico loco*," an honour accorded only to very few professors.

The Winter Term of the Austrian Universities.

Last winter the Austrian universities were very well attended by students, and in particular the medical and biological institutes could not accommodate all those who sought admission. It seems that apart from the natural increase of population

the attraction of scientific study induces constantly increasing numbers of young persons of both sexes to betake themselves to some university. The proportion of medical students to those of the other faculties — namely, philosophy, law, and theology—has increased from 19 per cent. to 24 per cent., as compared with the numbers recorded in the winter of 1912–13, whilst the total number of students has gone up by 3 per cent. There were 370 graduations as doctor of medicine in Vienna, or more than 20 per cent. in excess of the graduations last year. The chief increase of students and medical graduates was noted in Vienna and Prague, whilst the other smaller universities had a considerably less percentage. It is interesting to find that the number of foreign students and medical graduates—working in the medical institutes chiefly—is constantly rising, and that the influx comes chiefly from England and the United States of America, whilst the Russian and Italian contingents are rather less numerous than in previous years.

Grievances of Veterinary Students in Vienna.

More than a year ago the relations between the students of the veterinary school and the military managing board began to be strained, but a settlement of the disputed questions was eventually arrived at, although not without much difficulty. Quite recently, however, discord has again arisen, on account of the military authorities in command of the veterinary school having violated the university rules as understood by the students. The authorities having ordered a class to be formed for men who were said to have no right to attend the university, the students regarded this as a serious affront offered to them and demanded satisfaction. When this was refused they not only declined to do their class work but also prevented the delivery of any lectures, the newly-formed class above mentioned being interrupted in like manner with the others. The students demanded the immediate dismissal of the offending officer, and as this was similarly refused the managing board found no way out of the difficulty but to close the school and send the students home without having passed the necessary examinations. This means that the students lose this winter term, and many of them lose also the scholarships and privileges which can be gained only by those who have passed certain examinations. The students of the other faculties in Vienna have expressed their sympathy with the veterinary students in the conflict on which they have entered, and the former in their turn intend taking radical measures to ensure that academic rules and academic liberty shall be respected in all departments of university training.

April 6th.

CANADA.

Medical Inspection of Schools in Quebec and Ontario.

IN Montreal medical inspection of schools is under the Board of Health. Up to the present time the city has been divided into 19 districts, with a medical inspector in charge of each on part time at $1400 salary per annum. There are 254 schools in the city with approximately 85,000 pupils, so that each inspector is in charge of some 13 schools. There have been only seven nurses, but with the reorganisation of the Health Department of the city now proceeding under the new medical officer of health, Dr. Boucher, this number will be increased to 15 or more. The medical inspectors will probably be called upon to give all their time to this work on increased remuneration. Since medical inspection was established pediculosis and scabies have almost disappeared from the Montreal schools. Practically all the population of the city is vaccinated. The people coöperate willingly in medical inspection. Outside of Toronto, which has a well-established system under the Board of Health, a number of places in Ontario have inaugurated this work. Several other cities and towns have considered the question, but are waiting for a provincial law establishing medical inspection throughout the province.

Ontario Workmen's Compensation Bill.

In 1910 the Ontario Government appointed Chief Justice Sir W. R. Meredith Commissioner [as to the laws relating to the liability of employers to compensate employees for injuries received during employment. The Commissioner visited England, Germany, and certain places in the United States, and as a result of his studies and observations a Bill is now before the Ontario Legislature which will be passed at the present sitting of that body. It is, however, not satisfactory to the medical profession. When it was first learned that a Commissioner had been appointed the Academy of Medicine, Toronto, appointed a special committee to watch the legislation which might be introduced. This committee was placed in charge of Dr. Bruce L. Riordan; and at a recent special meeting of the Academy Dr. Riordan presented the report of his committee. The Act is to be administered under the powers of a Commission whose decision in all matters shall be final, and there shall be no appeals allowed to the ordinary courts of the province. The committee calls for the reasonable payment of medical expenses in connexion with injuries which is not provided for in the Bill, and points out where the Bill should be amended so as to comply with this fair stipulation. The Bill is based more upon the German than on the British law. The Minister in charge of the Bill has been interviewed by members of Dr. Riordan's committee, who pointed out that coöperation on the part of the medical profession was most vital for the success of the Bill. Due consideration of the points raised by the medical deputation has been promised by the Government.

Syphilis in Toronto.

Quite recently the subject of syphilis in Toronto was under discussion by the Academy of Medicine. Dr. J. S. Graham reported that the total number of cases admitted to the Toronto General Hospital from August 11th to Dec. 13th, 1913, was 412; and of this number 180 gave a positive Wassermann reaction. Professional classes had the low percentage of 7, while business classes stood at 23. Dr. Mann gave the results of tests at St. Michael's Hospital. Of 158 men and 180 women examined, 57·5 per cent. of the men gave a positive reaction, 37·25 per cent. negative, the residue being doubtful. Of the women, 64·5 per cent. gave a positive, and 21·6 negative. Dr. Gordon Bates and Dr. G. S. Strathy tabulated their experiences as revealed by doing the test on about 1200 patients. They dealt with these under the heads: (1) Venereally infected; (2) infected through marriage; (3) inheritance. In the last class the cases were taken from the Hospital for Sick Children, Toronto, and the Hospital for Feeble-minded, Orillia. At the Children's Hospital they tested and found positive the parents of 37

suspected syphilitic children. At Orillia they tested 100 patients. Three were positive. Thirty defective children were also tested at the Children's Hospital; none gave a positive reaction. They come to the conclusion that syphilis plays but a small part in the direct etiology of feeble-mindedness.

Hospital Resignations.

Dr. Francis J. Shepherd, for 31 years senior surgeon of the Montreal General Hospital, has resigned, and is at present on a trip to Panama. Dr. W. H. Hattie, who has been superintendent of the Nova Scotia Hospital for the Insane for 14 years, has resigned, and has been appointed chief health officer for the province.

The Laurentian Society.

This society for the treatment and control of tuberculosis, during the first five years of its existence, has discharged 170 patients from its sanatorium. Of these, 98 are well and following some occupation, 24 are dead, 3 could not be traced, and 45 are still invalids.

March 24th.

INDIA.

The Town Planning of Delhi.

IN considering the future of Imperial Delhi it is important not to overlook the measures required to bring the Delhi of to-day into line with the new capital. The walled city and densely populated suburbs have long had an evil reputation for unhealthiness. Sanitation on modern lines has never been undertaken on a large scale, and epidemic disease in the shape of fever, cholera, and small-pox has levied a heavy toll on the inhabitants. Hence the death-rate has always been high and the infant mortality is even now appalling. For the new city that is being planned to the south to have in its immediate neighbourhood insanitary areas holding a congested population would be a grave mistake. Imperial Delhi in its true sense must embrace all the units that are at present roughly grouped together, and each one must be above reproach in the matter of public health. Improvements, then, in Delhi as we know it now must go hand-in-hand with the Imperial scheme that has for its object the creation of a brand new city on the southern site. Major H. C. Beadon, Deputy Commissioner, in his capacity of president of the municipality, drew attention to this point in his remarks on the annual municipal report for 1912–13. "The most pressing need of the Delhi citizen," he wrote, "is room to build, room to work, room to play, room to walk, room to drive—Room." He showed how the city is hemmed in by the Jumna, the notified area (which includes the civil station), graveyards, railways, and State lands—those to the south being now mainly reserved for the new city. "Instead of decent orderly expansion the people have been huddled into a totally insufficient area, so that the streets have been encroached on, slums have been built, and land has become so valuable that capitalists cannot build, and improvements, however pressing, cannot be effected." He urged very strongly that to relieve this congestion the whole area from the great Indian Peninsular Railway to the Darhaulia Nallah should be town-planned.

Medical Provision in Burma.

The Burma Chamber of Commerce recently called the attention of the local government to the inadequate provision of European medical officers in the province, which was aggravated by the medical policy laid down in the Secretary of State's despatch of December, 1908. In other Indian provinces with an organised European medical service the practice of Western medicine has been encouraged. Here there is no material for the recruitment of a native independent medical service. As examples of the Government medical policy, the chamber points to the refusal to supply Indian Medical Service officers to the growing trade centres, under-staffing the Rangoon General Hospital, and the slow development of the Burma Medical School. It is contended that by the refusal to meet the need for medical aid in rapidly growing commercial towns many valuable lives are lost and commerce has been checked. The policy of repression of the Indian Medical Service is detrimental to the commercial progress of this young province. The local government replied sympathising with the view that it was desirable to post Indian Medical Service officers as civil surgeons in a number of districts for which they are not now available. The need for more such officers in Burma has been represented to the Government of India.

Unhygienic Bombay.

Bombay has been so long known to the countries of the West and to the tourist as "Bombay the Beautiful" that people have not given much thought to Bombay the "unhygienic." It must be regretfully admitted that notwithstanding the very large annual expenditure on its health department, Bombay is still a good deal backward in sanitation. Bombay may be considered as one of the most densely crowded cities in the world. Not only have all available building areas in the city been long since taken up for building purposes, but a very large number of residential quarters in the shape of tall houses and rickety tenements have been allowed to crowd on them without much heed to the needs of the people. There are very few open-air spaces in the shape of parks, gardens, or other places of public resort to act as "lungs" to the city, to the urgent needs of its teeming population, densely packed in every nook and corner of it. What is actually meant by "overcrowded" can only be realised by a nocturnal visit to one or two of the many Goanese residential clubs which exist, or to one of the large tenements in some of the most crowded parts of the city. Most of these tenements consist of very small rooms, ill-ventilated, damp, and unwholesome, and are literally crowded with people, many of whom go out for work during the greater part of the day, and who on return home can scarcely get more breathing space than what is obtainable in the shape of the barest sleeping accommodation at night. No wonder overcrowding should thus stand far and away as one of the largest factors, if not quite the largest, in the very high rate of disease and death in the city. A still greater menace to the health of the city are the perverse and uncleanly habits and the apathy and ignorance of the vast bulk of the people who make up this heterogeneous mass of humanity. Although these things may not be easily preventable all at once, yet there is ample room for the exercise of certain corrective and educating influences, leading gradually up to considerable improvement.

The Calcutta School of Tropical Medicine.

The Governor of Bengal, Lord Carmichael, on Feb. 24th laid the foundation stone of the School of Tropical Medicine at Calcutta. In the presence of a large gathering His Excellency and Lady Carmichael

were received by Colonel G. F. A. Harris, Inspector-General of Civil Hospitals, Bengal, who conducted them to the dais and made an introductory speech, in which he sketched the scope and aspirations of the Calcutta School. He concluded with a strong appeal for financial help. After the laying of the foundation stone Surgeon-General Sir C. Pardey Lukis, Director-General of the Indian Medical Service, conveyed the good wishes of the Government of India for the success of the school, and expressed his own keen personal interest in the subject. Lieutenant-Colonel Leonard Rogers, I.M.S., stated that donations amounting to Rs.1,17,952 had already been received. Lord Carmichael, in the course of a sympathetic speech, referred to the interest taken by the Viceroy in the scheme, and read out a message of encouragement which Lord Hardinge had telegraphed.

March 1st.

Obituary.

BENJAMIN NEALE DALTON, M.D. LOND., L.R.C.P. LOND., M.R.C.S. ENG.

ON March 23rd Dr. Benjamin Neale Dalton, a well-known practitioner in South London, died at the age of 70, after an illness of more than five years' duration. Dr. Dalton was the son of a stockbroker and was born at Stockwell in February, 1844. He was educated at the City of London School and entered as a student at Guy's Hospital in October, 1863. There he had a distinguished career. He took the first students' prize in three successive years, and in the third year obtained the treasurer's gold medal for surgery and the treasurer's gold medal for medicine, and further was awarded a prize of £10 for a paper on Malformations read before the Physical Society. After qualifying and acting as house surgeon he read for the degree of the London University, passing promptly the preliminary scientific examination and in 1870 the first M.B. examination. He was then appointed demonstrator of anatomy, and held the appointment for two years. In November, 1872, he took the final M.B. Lond., with the scholarship and gold medal in medicine and honours in obstetric medicine and in forensic medicine. In the next year he became M.D. While teaching anatomy he started a practice in South Norwood which he continued to hold until his final illness. He was industrious and hardworking, keenly interested in the scientific side of his profession, and he acquired a large connexion and was frequently consulted by his medical neighbours. He was a constant attendant at the local medical society, before which he read several papers. He kept himself acquainted with all modern advances. He was a great reader of history and philosophy, and was fond in his spare time of gardening, carpentry, and photography. On his holidays he much enjoyed foreign travel. He was married in 1878 and leaves a widow, three sons, and two daughters.

BIRMINGHAM AND MIDLAND SKIN HOSPITAL.—The annual report states that 282 in-patients were treated during last year, and 6200 out-patients, as against 276 and 6663 the previous year. The response to the appeal for donations to the radium fund had been very disappointing, only £46 having been received.

Correspondence.

"Audi alteram partem."

THE FACULTY OF MEDICINE OF THE UNIVERSITY OF LONDON AND EXTERNAL STUDENTS.

To the Editor of THE LANCET.

SIR,—At the meeting of the Faculty of Medicine of the University of London on Thursday, March 26th, an important vote was taken on the question of exclusion of external students from the Faculty. A division by show of hands gave 21 persons voting for exclusion and 19 against. The meeting had been called by the Board of the Faculty, with due notice that a number of propositions materially affecting the whole future of the Faculty and the University would be submitted for final decision by the Faculty, and it was held at the rooms of the Royal Society of Medicine—that is, in a place offering a maximal degree of convenience for attendance. As the reasons which have been often advanced for inadequate attendances of the Faculty—namely, inaccessibility of the place of meeting and insufficient importance of the agenda—cannot here be urged, the decision must be taken to represent the real feeling of the Faculty of Medicine as a whole, and I for one so accept it.

The Royal Commissioners based their recommendation to exclude the external student from the Medical Faculty on the ground that the Faculty had "passed a unanimous resolution" in 1909 in this sense; and, further, on two arguments which they adduce, and which I shall consider immediately. The first statement can no longer be maintained; many of us think it was a travesty of fact when it was made, and it must certainly now be relegated definitely to the limbo of fiction. I submit that the division shows that opinion is nearly equally divided on the Faculty, and that there is no mandate for introducing a change, so far-reaching and so radical, for which the arguments which have been offered are so singularly unconvincing. The Commissioners, it is true, had no personal or practical experience of the problems which they were called upon to investigate. But they were carefully coached by the party which desires the extinction of external degrees in the University, and the arguments which are thought worthy to stand in the Report probably represent the flower of wisdom of these advisers. The Commissioners, in fact, make no secret of their source of inspiration. The rubric to the section (§393) summing up the opinion of the Commissioners on external degrees runs thus: "Abolition of external degrees desirable *in the interests of schools and teachers*." (The italics are mine.)

The insertion of the limiting word "certain" immediately before the phrase "schools and teachers" would make the synopsis still more accurately reflect the whole spirit and meaning of the Report, and would indeed go a long way to explain its genesis. Here are the sole arguments, which all this collective deliberation can produce, for excluding external students from the Faculty of Medicine.

We admit the argument of several witnesses that it is an injustice to doctors who have studied in London and obtained the London degree that the same qualification should be

open to students who have never had any connexion with the University beyond sitting in its examination halls. Every school of medicine in the kingdom is now connected with a university, and no hardship would be imposed by requiring that medical students should graduate in the university in which they have studied (Final Report, p. 180).

The Commissioners bewail the "grave injustice," as they call it elsewhere in the paragraph quoted, that the London-taught graduate should run some risk of being confused with his brother graduate who has studied in a provincial University and been awarded his degree in London, as the result of passing the same examination which the London-taught graduate has passed. The persons directly interested in this argument are the graduates of the University, who must smile at this unwonted concern for them expressed by the Commissioners when they remember that these same gentlemen recommend the reduction of the graduates' representation on the governing body of the University—i.e., the Senate—from its present ratio of nearly one-third to less than one-seventh. This is surely a much "graver injustice" to graduates. The Commissioners' sympathy is, in fact, very like the not less noisily expressed sympathy of the Walrus and the Carpenter for the oysters which they were about to devour.

As a matter of fact, the graduates have shown, as I have stated in a previous letter to you, through their proper channel—namely, Convocation, which consists entirely of graduates—an overwhelming majority in favour of a decision directly the reverse of the halting opinion expressed in the late division of the Faculty, only one-third of whose members are themselves graduates of the University.

The second argument is at once refuted by reference to the official statistics which I quoted in my last letter,[1] and which demonstrate that the number of provincial students coming to London has not been diminished since the facilities to which allusion is made for graduating elsewhere have come into existence. The Commission in effect say that the provincial student "ought" to be satisfied to stay at home. He is not so satisfied. The Government, which fathered this Commission, is at this moment engaged in trying to persuade the inhabitants of Ulster that they similarly "ought" to prefer to be governed by their fellow countrymen. They do not so prefer. The Government are finding out, as I believe the Commission will also find out, that it is not so easy a matter as they imagine to coerce the legitimate preferences of free adult men.

The Faculty has long made bitter and just complaint that at the present time too few students enter for the medical degrees of the University of London. It is an unfortunate fact that many of the best men in the metropolitan schools after completing their studies in London take degrees in the provincial Universities of Oxford and Cambridge. I am frankly at a loss to understand why the Faculty which encourages this system should wish to stop the compensating flow from the other provincial universities to London, by a resolution which must automatically exclude more than 12 per cent. of the students at present taking medical degrees. I can only explain this inconsistency, as it seems to me, by supposing that the majority of the Faculty still cherishes the illusion which, it will be noted, the Commissioners themselves do not harbour, that the proposed new regulation will force the provincial students to take their courses as well as their degrees in London.

The resolution passed by the Faculty would, if adopted by the University, differentiate medicine from all other faculties as they exist at present; it would dock the University of 12 per cent. of its annual pass-list in medicine, and it would withdraw privileges from a large and ambitious class of students to whom the University has offered these privileges, unchallenged, for 50 years. To justify such sweeping change its supporters must find better reasons than they have been able up to the present to produce; they must convince a much larger proportion of the Faculty of the necessity for such change; above all, "they must," to use Professor Starling's words in another connexion, "show that their 'action' is not directed by a regard for the private interests of themselves or their schools," as seems indeed to be suggested by the Commissioners themselves in the quotation I have italicised above.

I am, Sir, yours faithfully,

E. GRAHAM LITTLE.

Wimpole-street, W., March 30th, 1914.

[1] THE LANCET, March 17th, 1914, p. 710.

THE DUCTLESS GLANDS.

To the Editor of THE LANCET.

SIR,—I have read with interest in THE LANCET of March 28th Major R. McCarrison's letter in which he supports Professor Swale Vincent's statement to which I have taken exception. I am glad, however, to notice that Major McCarrison, who has done excellent work on diseases of the thyroid, in the last paragraph of his letter supports my general findings concerning the relationship between the ovaries and thyroid. My conclusions were based both on clinical and experimental observation, but he contends that only the clinical evidence is worthy of consideration.

With regard to Major McCarrison's criticisms of my results as to the effect of oöphorectomy upon the thyroid, I hope he will believe me when I say that I am fully aware of all the experimental difficulties he so pertinently raises; indeed, I have mentioned most of them myself in the Arris and Gale lectures and elsewhere. It is, therefore, hardly justifiable for him to cut out from my lectures two short sentences which were discussed and qualified, and obscure them with a network of side issues. This will be obvious to anyone who has read my original communications.

The points I brought out after presenting certain facts were, that the thyroid varies considerably, not only in different mammals, but in the same species in different circumstances, notably in regard to pregnancy, which is a seasonal function. And I showed, with due caution, I believe, that the thyroids of rodents, owing to the different habits and food of these animals, differ from those of the carnivora, not only normally, but also in the results obtained after experimental removal. Further, I found that in rodents, which have an inactive (i.e., non-essential) type of thyroid—in spite of the cellular appearance and scarcity of colloid—oöphorectomy increased the amount of colloid quite unmistakably in non-pregnant adult animals. My experiments can hardly be described as "few," for I have removed the ovaries from rabbits a very large number of times, and I have many sections of the thyroids from these cases. The experiment is, however, easily repeated by anyone who doubts my findings, or attributes special peculiarities

to my animals, and is capable of distinguishing between the normal and abnormal in similar circumstances, and after making due allowance for the normal variations. It should be incumbent on all who adversely criticise the experimental and clinical findings of others to adduce evidence to the contrary. It is a constant source of wonder to me why so many men, whose own scientific work may be accurate and valuable, should always be ready to criticise the work of others on purely theoretical or imaginary grounds, when experimental repetition is easy and conclusive. The investigator who is incapable of making a mistake has yet to be born, and I am merely defending my own findings and statements because they have not yet been shown to be wrong; when they are proved by scientific evidence to be erroneous in any particular I shall be the first to acknowledge the fact, even if I make the discovery myself.

I am, Sir, yours faithfully,

Liverpool, April 1st, 1914. W. BLAIR BELL.

To the Editor of THE LANCET.

SIR,—In THE LANCET of March 28th Major Robert McCarrison has an interesting letter on the structural variations that he has observed in the thyroid glands of rats, in association "with locality, with altitude, with season, with food, as well as with the hygienic conditions incidental to confinement in cages," his conclusions being based on the study of the histological appearances of the thyroid glands of about 450 rats.

As the result of an even more extensive investigation carried out many years ago I was led to conclude that the food factor was of special importance. I then drew attention to the fact that the histological appearances of the thyroid gland in any group of rats obtained at the same time from one source conformed to one type, but that various types were obtainable, these doubtless corresponding to different degrees of activity of the gland of a nature at present ill understood. The different histological appearances observed were illustrated in the *Journal of Experimental Physiology* many years ago. Another point which was brought out by my observations was the influence of diet in modifying the structure of the gland, the changes observed being of a very striking kind, though not constant in character. Major McCarrison further refers to the striking variations which he has observed in the thyroid glands of rabbits and guinea-pigs. I can confirm this statement, and the same can be said of the thyroid gland in pigs. At one time I examined the thyroid gland of a large number of pigs and was impressed by the differences observed in the histological appearances. This is, perhaps, not very surprising when one considers the differences observed in the naked-eye appearances of the carcasses. The colour of the muscle and the colour and consistence of the fat vary enormously, this being due, in the view of the butcher, to the feeding of the animal, the commercial value of pork from animals fed on "hard" food being considerably higher than of animals fed on so-called "soft" foods (chiefly brewery refuse).

A fruitful field for investigation is open to those who have facilities to investigate some of the interesting problems suggested by the facts brought out in Major McCarrison's letter.

I am, Sir, yours faithfully,

CHALMERS WATSON, M.D. Edin.

Edinburgh, April 1st, 1914.

MINERS' PHTHISIS ON THE RAND.

To the Editor of THE LANCET.

SIR,—A letter of mine upon the above subject kindly published by you in THE LANCET of Dec. 2nd, 1911, caused at the time an outburst of indignant protest both from the mine-owners and their official organs. My figures were said to be exaggerated and my assertions false. But my figures were very sadly underestimated, and my assertions upon this very grave subject had never been proved to be otherwise than correct. The statements and figures of the mining houses and the Government, on the other hand, can seldom be relied upon, for the simple reason that this disease is cursed with the damnable political insincerity of both the above parties.

Commission after commission has been formed and packed with incompetent persons, with the result that to-day silicosis is more prevalent than it has ever been. In 1911 roughly 12,000 white men were employed below on these fields; to-day the total has fallen to about 10,000. In 1911 three men per day applied for relief; to-day it is nearer ten, and accumulative claims must have been disposed of long ago. Therefore, so far all the supreme efforts of the mining houses and their servants must be written down a complete failure, and the sooner this is recognised and faced the better.

In order to refresh your readers' memories I may say that it has long been held by medical men, both here and in Australia, that it is only the very finest dust caused by drilling, blasting, and moving rock which produces silicosis. The condition upon the Rand must not be taken to be unique for the production of silicosis. It must be clearly remembered that silicosis, and rapid at that, occurred during the excavation of a large open drain through sandstone in Sydney not many years ago. This, together with all the other occupations well known to produce silicosis, does away with the theory that it is entirely caused by the dust from blasting. To those unacquainted with the process of rock drilling I would point out that though water may be freely used in the form of a spray from the moment the drill hits the rock to the end of a 4 foot or longer hole, there is a time when it does not effectually destroy the finest dust. This period is when the drill is hammering and chipping away at the rough uneven surface of the rock in order to gain a start for the hole. This process is termed "collaring the hole." More frequently than not no water is used during this process, which provides abundance of the deadly dust. Another difficulty to be faced is the constant breaking down of water-supplies; these for the most part are avoidable and due to too great pressure, corroding of unprotected pipes, &c. Almost all these difficulties could be overcome by a small exercise of common sense on the part of the mining engineer; but, no, the same stupid system and mistakes are made year after year irrespective of the consequences.

The mining authorities would hold that by improved ventilating methods the dust caused by blasting has been largely overcome. If this is so, why is miners' phthisis more virulent than ever? I do not hesitate to say now what I have said before, that the continuous forced passage of dust-laden air through places where men are working can be of little advantage, if any. The dust must be rendered harmless as much as possible at its point of origin. If the fine dust is entirely produced by blasting, then, according to the theory of the

mining engineer, it should be all carried out of the mine before the men re-enter to work. The fact remains that sufficient of the really fine fatal dust (irrespective of blasting) is produced by the rock drills to account for the whole of the silicosis on the Rand; and yet let me point out how the mining houses deal with this vastly important matter.

Rock drills are placed in numerous positions on the mines and are mostly worked by kaffirs under the direction of white miners. Your readers will note I say under the direction. Now, to show the attitude of the mining houses as to this terrible disease I will illustrate what was being done before the late industrial upheaval and what is taking place to-day. Before the strike the miners through their union endeavoured to limit the number of machines each man should supervise; upon the whole they were fairly successful. To-day there is no limit, and no limit means no control as regards the keeping down of dust produced by rock drills. If the mining houses and the Government (which are practically one) were honestly sincere in their efforts to stop this curse, they would surely insist on the efficient control of every drill. This by no means implies that one miner is necessary for every drill when one or more are placed together, but, with few exceptions, one miner only can supervise one drill properly when working any distance up a raise. The production of the finest dust from a rock drill means, when circulating as it freely does, the death element to everyone working in the mine.

I believe I am right in the following facts; if not, I hope your readers on the spot will correct them. Miners' phthisis was well known not many years ago in ganister mines near Sheffield. The question received the serious attention of the Home Government, with the result that it has now practically ceased. To prove the keen interest in stamping out this disease shown by the mining houses and the Government I must add the following. The medical officer to the said ganister mines both during and after measures taken to prevent this disease was here on the Rand last year, and upon his information I published in the press the facts he gave me, and also suggested that his opinion should be of the greatest value. What notice was taken? Absolutely none. "No experts wanted from oversea except when required for political purposes" might well be written over the doors of the mining houses. I believe I am right in saying that the Home Government insisted upon the fine dust produced in ganister mines in England being kept down by the use of steam, when miners' phthisis ceased.

The fact which has to be grasped by those who seriously wish to see our vast industry freed from silicosis, is that water in the form of sprays, &c., has failed to diminish the disease. The fact that steam has eradicated miners' phthisis in the ganister mines points to the fact that in order to attract the very finest and most deadly dust the water must be in a much finer state of division, and this can only be produced by steam. If the simple experiment is made of forcing dust through a volume of water, the difficulty of destroying the fine dust which emerges is readily seen. Steam therefore appears to be not only the only hope, but by experience elsewhere the only sensible solution left. Mr. Moynihan, the well-known consulting engineer, pointed out how steam could be introduced after the cessation of drilling through the compressed air pipes. The question at what depth this would be impracticable, if at all, remains to be seen. Anyhow, it would only seem common sense to gradually work down from level to level. Something more must be done to prevent this awful waste of life, and that at once.

I am, Sir, yours faithfully,

Johannesburg, March 16th, 1914. J. L. AYMARD.

THE BIOLOGY OF TUMOURS.

To the Editor of THE LANCET.

SIR,—I am much obliged to Mr. H. C. Ross for his kindly criticism of my lecture upon the Biology of Tumours published in your issue of March 21st, and for directing attention to the action of substances known as auxetics. All that he says simply confirms the views I ventured to put forward. As their name implies, auxetics do but add to a force that is already present. They supply nothing that does not exist already.

But I cannot agree with Mr. Ross that it has been proved that certain cells will not divide unless they absorb a definite chemical stimulus. A general negative such as this is not capable of proof, nor if it were proved, is division the only form of growth. Growth does not of necessity imply even increase in size. When the chemical processes that underlie growth come to an end life comes to an end with them.—I am, Sir, yours faithfully,

Wimpole-street, April 6th, 1914. C. MANSELL MOULLIN.

"THE MENACE OF CANCER" AND AMERICAN VITAL STATISTICS.

To the Editor of THE LANCET.

SIR,—The Director of the Imperial Cancer Research Fund, Dr. E. F. Bashford,[1] goes far out of his way in his attack on the trustworthiness of American vital statistics and incidentally on the accuracy of my conclusions that cancer is on the increase in the United States, as discussed at some length in my address on "The Menace of Cancer" before the American Gynecological Society, in 1913. The argument of Dr. Bashford, if it can be dignified by that name, is not new, for he gave expression to practically the same views in his first address on the cancer problem, delivered in the United States in 1912. Regardless of the fact that I personally called his attention to the gross inaccuracies of his statements, he repeats his misleading assertions, and fain would make the world believe that the Americans still live in the Dark Ages and that the pathologist knows more about statistics than one professionally connected with statistical research. It would take up more space than is likely to be available for a full reply to answer even briefly the numerous misstatements on the part of Dr. Bashford, who practically limits his remarks to American vital statistics, which, in his opinion, are thoroughly untrustworthy and useless for the purpose of establishing the truth about the cancer situation at the present time and in the recent past. It is to be hoped, however, that in behalf of the cause of statistical science, medical progress, and simple justice to the undersigned sufficient space will be granted to establish concisely the facts in the case. My address on "The Menace of Cancer" was first delivered, by request, before the Academy of Medicine of Northern New Jersey, and subsequently, by invitation, before the American Gynecological Society, the Clinical

[1] THE LANCET, Feb. 7th, 1914, p. 379.

Congress of Surgeons of North America, the Eastern Medical Society of the City of New York, the Wistar Institute of Biology and Anatomy of Philadelphia, the Academy of Medicine of Pittsburgh, &c. There has not come to my notice a single qualified contradiction of a single important statement made in the address on the part of an American medical journal in a position to pass judgment upon the facts. The address was delivered for the purpose of emphasising the seriousness of the cancer problem, of illustrating the frequency of cancer occurrence, and of arousing a public interest in the necessity of educating the public in the plain facts of cancer, as a prerequisite for a nation-wide campaign for cancer control. The address was largely instrumental in bringing into existence the American Society for the Control of Cancer, which has on its board of trustees some of the foremost physicians and surgeons of America, and of the Committee of Statistics of which I have the honour and the privilege to be the chairman. To the address itself Dr. Bashford gives practically no attention, but he requires more than three pages for his bitter, unwarranted, inaccurate, and unjust attack upon American vital statistics.

1. He questions the accuracy of the assertion that the cancer death-rate of the United States has increased from 63 to 74·3 per 100,000 of population during the period 1900–11. The term "United States" is used as a matter of convenience, for the rates refer to the "registration area," which by the year 1911 included 63·1 per cent. of the population of the country. On the part of one familiar with local conditions, it is entirely safe to assume that the conclusion which applies to the registration area applies with approximate accuracy to the remainder of the country not at present under registration. For the end in view it is, however, entirely immaterial whether the conclusion applies only to the registration area or to the country as a whole. There is no reason whatever for supposing that there has not been a corresponding increase in the cancer death-rate for the remainder of the country at present not under registration. Considering that the population under registration in 1911 amounted to 59,275,977, it will be observed that the actual numbers considered were far in excess of the corresponding population for England and Wales, or, for that matter, for the United Kingdom as a whole. The numerical basis for the conclusions was, therefore, sufficiently large and representative of the United States as a whole, but aside therefrom, the statistics of large cities were considered separately and for a much longer period of time.

2. Dr. Bashford deplores the "very backward condition" of vital statistics in the United States at the present day. There is no country in the world for which accurate vital statistics are available for so large a population, thoroughly digested in detail according to age, sex, and certified causes. The area at present not under registration represents vast sections of country sparsely populated and large regions in the south with a predominating negro population.

3. Dr. Bashford deplores that centralisation for the recording of births, marriages, and deaths has not yet been effected in the United States, and that recourse must be had to the reports for the several States. This statement is misleading. Neither the United Kingdom nor the German Empire, nor many other important civilised countries, have a centralised or federal system of recording deaths, with which the present discussion alone is concerned. By an arrangement with the Division of Vital Statistics a certified transcript of every death is obtained for what is known as the registration area, which includes either entire States or cities and towns which, upon the basis of thorough investigation, have been found to maintain a system of death registration satisfactory to the Census Office. Granting that absolute accuracy is not obtainable by this method, it is maintained without fear of contradiction that the degree of accuracy is approximately the same as for other civilised countries and that a system of Federal registration is not necessary, nor would such a system provide a material increase in the accuracy and completeness of the facts.

4. According to Dr. Bashford, "in 1880 the compulsory registration of deaths, as enforced by municipal or State authority, was first introduced *at* Massachusetts, New Jersey, the District of Columbia, and for some cities where State control did not obtain." As a matter of fact, the compulsory registration of births, marriages, and deaths was established in the State of Massachusetts under date of March 3rd, 1842, and annual reports, with reasonable completeness, have been published for that State since that year. Registration in the State of New Jersey was established in 1848, in the District of Columbia in 1878, in the State of Vermont in 1857, in the City of Providence, R.I., in 1855, &c.

5. The statement is made that "the Southern States are still *entirely* without any sort of reliable registration." As a matter of fact, most of the large cities of the South have had in force the compulsory registration of deaths for many years. For New Orleans the statistics extend over half a century, and practically the same is true of Mobile, Savannah, and Charleston.

6. It is true that the present registration area includes only 22 out of the 48 States of the United States, but additional thereto the registration area includes municipalities of 1000 and over in the State of North Carolina and 47 other representative cities, which combined with the registration States represent 63 per cent. of the total population of the Unites States, a population sufficient for the purpose of arriving at a trustworthy conclusion regarding American mortality from all causes, as well as from cancer.

7. Dr. Bashford, on the authority of Oertel, claims that New York City "has shown that the greatest laxity and inaccuracy obtains, owing to the neglect of the medical profession and the unwillingness of the authorities to enforce the prescribed penalties." The views of Oertel have not been accepted by qualified critics, although justified to a limited extent as regards initial diagnosis in hospital practice, which has but an indirect bearing upon the terminal certification in death registration. There is no laxity or gross inaccuracy inherent in the vital statistics of the City of New York, which are accepted by every authority on vital statistics throughout the world. The compulsory registration of deaths has been in force in the City of New York since 1865, but for half a century previous deaths were recorded in a more or less trustworthy manner and probably as accurately and conclusively as for most of the large cities of the world during the corresponding period of time.

8. According to Dr. Bashford an "attempt" is made in North Carolina and the district of Columbia to enforce registration. As a matter of fact, the local ordinances governing the registration of

deaths are enforced with reasonable completeness in the towns of North Carolina, and with entire completeness in the District of Columbia, where compulsory registration has prevailed since 1878.

9. The fact that 37 per cent. of the population of the United States are not at present within the registration area has no bearing whatever upon the trustworthiness of conclusions based on the statistics for the population subject to registration at the present time.

10. The statement that previous to 1902 "no two States and scarcely any towns used precisely the same methods of certification of deaths" is, broadly speaking, incorrect. No country in the world has adopted a uniform method of "certifying" deaths and no such law could be enforced. The accuracy and uniformity of death certification depends upon the attained state of medical science and not upon legislation. The use of a standard death certificate facilitates statistical analysis and improved classification, but it has no immediate bearing upon the accuracy and completeness of death certification itself as regards the causes of death.

11. It is claimed by Dr. Bashford that the standard death certificate was "revised by Act of Congress in April, 1913." As a matter of fact, there was no such revision, and Congress has no authority under the Constitution to make the use of a standard death certificate obligatory upon the several States or municipalities having adopted a system of compulsory registration.

12. The view of Dr. Bashford that "no comparison is possible between one year and another for the United States, or even between different States," is a self-evident absurdity. For a group of States with an area larger than the United Kingdom and a very considerable population comparable statistics have been available for half a century, and for a large number of representative cities comparable records are extant for an equal if not a longer period of time. For the registration area itself a strictly accurate comparison can be made from year to year, and the changes in the death-rate from all causes or specified causes can be determined with the required degree of scientific accuracy.

13. Dr. Bashford becomes quite serious when he remarks that "it must be added *emphatically* that even the States longest under the compulsory registration law, e.g., Connecticut and Massachusetts, have not yet succeeded in enforcing registration of *all* births." Waiving the question that the registration of births has nothing whatever to do with the question as to whether cancer is on the increase or not, it may be said that the registration of births in the State of Massachusetts is probably as nearly accurate as for most of the other civilised countries of the world. In no country are "all" births recorded, and it is only within very recent years that stillbirths were required to be reported in England and Wales.

14. The total population of the United States according to the Census of 1910 is given by Dr. Bashford as 90,753,237. The correct figures for the United States, exclusive of outlying possessions were 91,972,266.

15. Dr. Bashford claims that "the infantile mortality in the registration area of the United States cannot be estimated with any approach to accuracy." As a matter of fact, the annual reports of the Division of Vital Statistics of the Census give the number of deaths at ages under 1 by days, weeks, and months, and the proportion of such deaths to the total mortality on the one hand, or to the population at ages under 1 on the other, is the usual method by which the infantile mortality is calculated. It no doubt is of value to determine the proportion of deaths under 1 to the number of births, but it is entirely wrong to say that the infantile mortality in the registration area of the United States cannot be estimated with any approach to accuracy. The question is entirely irrelevant in the discussion of the question as to whether cancer is on the increase or not.

16. Dr. Bashford observes in all seriousness that "it is also common knowledge that the age constitution of a population is determined by the birth-rate, if immigration and migration be left out of account." The age constitution of every civilised country is affected far more by immigration and migration than by the birth-rate, and the question itself is therefore irrelevant, aside from the fact that it has nothing whatever to do with the problem of cancer.

17. Dr. Bashford maintains, in flat contradiction to the facts, that "the age constitution of the United States is simply unknown." In my address on "The Menace of Cancer" hundreds of cancer death-rates are given on the basis of population by divisional periods of life, including an official table for the registration States, calculated by the Division of Vital Statistics, giving the accurate rates for divisional periods of life and the crude and corrected rates for ages 25 and over. The statement that the age constitution of the population of the United States is unknown is preposterous. The United States took a census 11 years before one was taken in the United Kingdom. Even the Census of 1790 made a distinction of the population above and below the age of 16. The Census of 1800 gave the age constitution by five divisional periods of life. Beginning with the Census of 1830, the age constitution was given by decennial periods, which for all practical purposes meets all reasonable requirements. For more recent census periods the full analysis of the mortality by single years of life has been published, in conformity to approved census methods throughout the world. The statement, therefore, repeatedly made, that the age constitution of the United States is unknown is simply additional evidence of the gross ignorance of Dr. Bashford of the facts and conclusions which he essays to discuss with pretended scientific accuracy and fairness.

18. Dr. Bashford comments upon "the confused state of affairs in the United States as regards the vital statistics of that country." There is no confusion in the minds of Americans who make use of American vital statistics and who are familiar with the facts. The confusion exists solely in Dr. Bashford's mind, who apparently considers himself immune against criticism in matters which admit of no controversy at all.

19. Regardless of the fact that in my address on "The Menace of Cancer" there are hundreds of cancer death-rates according to age and sex and a number of diagrams concisely visualising the facts, the Director of the Imperial Cancer Research Fund again maintains that no account is "being taken of age and sex." Not only does the address referred to give the rates by age and sex, but also by race and age, and by organs and parts of the body according to sex and divisional periods of life. The statement is, therefore, without qualification, in flat contradiction of the truth.

20. The conclusion that "the absence of accurate enumeration of the number of births makes it impossible to estimate the proportion of males and females" is a self-evident absurdity. The proportion of males and females has been known for the population of the United States since the taking of the first Census in 1790, or 11 years before a census was taken in England.

21. In continuation of his remarks Dr. Bashford repeats: "Since the age and sex constitution of the population is unknown, this claim (of an increase in the mortality from cancer) cannot be upheld." In reply, I quote the following from my address on "The Menace of Cancer" as a further illustration of the indifference of Dr. Bashford to the facts:—"For males the increase in cancer during the 10-year period and at ages of 45 to 54 was 21 per cent.; at ages of 55 to 64 it was 39 per cent.; at ages of 65 to 74 it was 40 per cent.; and at ages of 75 and over also 40 per cent. For females the increase in the cancer death-rate at ages of 45 to 54 was 11 per cent; at ages of 55 to 64 it was 27 per cent; at ages of 65 to 74 it was 32 per cent; and at ages of 75 and over 44 per cent."

22. Dr. Bashford maintains that my tables of cancer mortality per 100,000 of population by sex "have an appearance of accuracy which cannot be maintained." Dr. Bashford omits to say that in practically all of the tables included in the address the rates are given by age and sex, and there is no *pretended* accuracy about them whatever. The table referred to was derived from the Vital Statistics of the Census for the registration States of 1900, and the required comparison is made for the two years 1901 and 1911, with a due regard to sex and 11 divisional periods of life. No more trustworthy or conclusive table of cancer mortality is published for any corresponding number of population in the world.

23. Dr. Bashford, apparently, is of the opinion that a low cancer death-rate is an evidence of improved registration, or as indicating only the stage to which vital statistics have developed. On this assumption the highest cancer death-rate of any one county of England and Wales would be the index of impaired registration in every county with more or less decidedly lower rates of cancer frequency. Apparently the Director of the Imperial Cancer Research Fund wants the world to believe that there are no local variations in the cancer death-rate, or that, in other words, neither local conditions nor race are determining factors, but that it is simply a question of imperfect registration. The conclusion of Dr. Bashford that "an accurate method simply cannot be adopted for the United States as a whole, or even for one or two States, if, indeed, for any single city," is a self-evident absurdity.

24. Reference is made to the method of cancer classification in the reports of the State of Connecticut for 1910. Dr. Bashford must have read this report as superficially as he did my address on "The Menace of Cancer," for on p. 213 of the report the mortality from cancer is given in detail by organs and parts of the body affected and by divisional periods of life. The inclusion of cancer deaths in the division of general diseases and as a subdivision thereof is in exact conformity to international usage on the basis of the revised international classification. Since the Connecticut reports were not used in my address on "The Menace of Cancer," the reference thereto is irrelevant.

25. Similar references are made to the statistics of Rhode Island, New York City, and New Jersey, all of which illustrate Dr. Bashford's ignorance of American vital statistics far more conclusively than they demonstrate any inherent or practically important defects in American vital statistics.

26. There are numerous other misstatements, false inferences, or references reflecting upon Americal vital statistics, which it would be superfluous to discuss in detail.

Practically the entire paper by Dr. Bashford is a meaningless jumble of inaccurate, misleading, and purposeless observations regarding a subject with which he has at best a very superficial acquaintance. He refers to the abandonment of the former method of enumerating deaths upon the decennial census, which has no bearing on the subject under consideration. He refers to the cancer censuses of Germany and Hungary, which are only very incidentally dealt with in my address on "The Menace of Cancer." The practical value of cancer censuses has been by no means disproved by the superficial, inaccurate, and misleading observations of Dr. Bashford on that particular subject. No reference was made to immigration or migration, since these are but incidental factors fully allowed for in the use of accurate population statistics according to age and sex. The fundamental question as to whether cancer is on the increase or decrease in the United States is not discussed by Dr. Bashford at all. No evidence has been produced to prove that it is wrong or misleading to speak of an increase in the mortality from cancer, nor are my observations regarding the cautious use of the data made mention of in Dr. Bashford's observations. The assertion that the position taken by King and Newsholme in 1893, that the increase in cancer is only apparent and not real, "has been amply justified" is again a deliberate misuse of Dr. Bashford's opportunity to force his own opinions upon the public.

The conclusion of Dr. Bashford that "the statements of the alleged increase of cancer in America have only the value of vague rumours" is entirely unjustified by the incontrovertible fact that at least 75,000 deaths from cancer occur annnally in the United States and that the time has come for a nation-wide interest in the problem of prevention and control. The work undertaken in America will be carried forward with a genuine devotion to the truth and with a due regard for all the facts and conditions affecting the cancer problem as a public question which requires to be taken into account. In any event, American students of the cancer problem will give slight consideration to the unfair, inaccurate, and misleading observations and conclusions of one who has demonstrated, as shown by the foregoing analysis, his utter unfitness to be considered a guide in cancer research from a statistical point of view.

I am, Sir, yours faithfully,

FREDERICK L. HOFFMAN.

Newark, New Jersey, March 10th, 1914.

*** Dr. Bashford's article was an uncompromising one, and Mr. Hoffman's tone, though regrettable in scientific controversy, has been inspired by that fact, as has our extension to Mr. Hoffman of a quite unusual space in which to reply. The main question at issue is the value of the machinery for collecting and collating American vital statistics, and the trustworthiness of the results obtained. To say that a district is in a "registration area" is not a conclusive reply to criticism. It is a prelude to such reply: systems of registration may have nominally existed from

the earlier part of the nineteenth century and yet be practically ineffective until far more recent times. Mr. Hoffman's remarks on British administration in many directions have exactly the same justification. In places where Mr. Hoffman contradicts Dr. Bashford he is himself contradicted by the Department of Commerce: Bureau of the Census of the United States.—ED. L.

EPITHELIOMA OF THE TONGUE IN WOMEN.

To the Editor of THE LANCET.

SIR,—The case of epithelioma of the tongue in a woman referred to in an annotation in THE LANCET of March 28th is important as calling attention to the comparative infrequency of this affection in the female sex. This infrequency is not so much recognised as it should be. But besides carcinoma of the tongue it applies to cancer of all parts of the mouth, pharynx, and larynx. This is shown by the Registrar-General's reports. In the past 11 years there have been in Woolwich 182 cases of cancer of the head, face, mouth, jaw, tongue, œsophagus, pharynx, larynx, and neck among men and only 47 among women.

The connexion of cancer of the tongue with smoking is well known, though it is usually attributed specially to clay pipes. Recent inquiries made in this borough point to the fact that any kind of smoking is a cause of cancer of the mouth and throat, especially when connected with alcoholism. Of 33 persons dying from cancer of the mouth and throat 45 per cent. took alcohol excessively, and 76 per cent. smoked excessively. Of 109 persons dying at advanced ages from other diseases 17 per cent. only were excessive smokers and 18 per cent. excessive drinkers. Of 25 excessive smokers who died of cancer of the mouth and tongue 15 smoked chiefly clay pipes, 8 briar or other form of pipe, 1 cigars, and 2 cigarettes. Among the non-cancer cases there were 40 smokers (excessive and moderate); 23 of these smoked clay pipes, 16 briar, and only 1 cigarettes. Out of 33 cases of cancer of the mouth and tongue there were only two who did not smoke. One of these had bad teeth, and in the other one, as in the case reported by you, there was no obvious source of the cancer.

I am, Sir, yours faithfully,

Woolwich, March 30th, 1914. SIDNEY DAVIES.

To the Editor of THE LANCET.

SIR,—In an annotation in THE LANCET of March 28th the occurrence in the female sex of epithelioma of the tongue is referred to as being extremely rare. This statement is hardly in accordance with the facts. Keyser[1] quotes 14 sets of statistics of epithelioma of the tongue bearing on the relative frequency of the disease in women; the highest estimate, that of Hayn, is 43 per cent., while the average of all the statistics gives a percentage of over 18. A feature of some of the recorded cases is the youth of the patient.

Keyser refers to five cases in which the patients were under 25 years of age, and in a case of my own[2] the patient, whose disease had existed for 21 months, died at the age of 26 years.

I am, Sir, yours faithfully,

C. HAMILTON WHITEFORD.

Plymouth, March 29th, 1914.

[1] THE LANCET, Sept. 17th, 1904, p. 829.
[2] Bristol Medico-Chirurgical Journal, March, 1908, p. 45.

AERIAL INFECTION.

To the Editor of THE LANCET.

SIR,—The annotation in THE LANCET of March 28th on the Passing of the Doctrine of Aerial Infection raises some important questions. Whatever the danger from air-borne infection may be, it is at any rate certain that no infectious disease has been brought by precautions against it, such as isolation hospitals, under such control as has been obtained in a series of diseases, ranging from enteric to yellow fever, by other means. The advantages secured for the individual or the family are not in question, but only those for the nation.

Is it then not probable that the scheme for preventing the spread of tuberculosis devised by the Astor Commission and adopted by the Insurance Act, to carry out which sanatoriums are being built all over the country, is founded on a mistaken idea, and may even check the diminution of mortality from pulmonary phthisis which began about 1850, before sanatoriums were dreamt of, proving that there are indirect methods by which this disease may be diminished?

Few diseases are less capable of effective isolation than phthisis. Isolate as one may, the air will still contain bacilli enough to infect the really susceptible. The larger the number of cases in which an arrest of this disease is obtained the more numerous will be the descendants from the more easily infected stocks. It is impossible to abrogate the law that a race is weakened by encouraging the survival of those unfit for the conditions under which they have to live, but it is possible to improve those conditions so that more may be able to survive with advantage to themselves and others.—I am, Sir, yours faithfully,

MICHAEL THOS. SADLER, M.D. Lond.

Brook Green, S.W., March 28th, 1914.

INFANT MORTALITY AND THE WELFARE OF INFANCY.

To the Editor of THE LANCET.

SIR,—Will you allow me to say a word on the subject of your annotation in THE LANCET of March 28th on the representation made to the General Medical Council by the National Association for the Prevention of Infant Mortality regarding the necessity for including in the curriculum a course of training in infant hygiene?

Everyone will agree with you in deprecating the addition of even a feather's weight to the burden imposed upon the student, and will assent to your proposition that in a readjustment of that burden lies the true direction of reform. And in the enlightened support you give to the proposal in question you indicate that the "little more" it involves should, in fact, provide the necessary readjustment. I wish to offer testimony in favour of this view, for I believe that such training will at once vivify, reinforce, coördinate, and illuminate the whole course of academic study. I can best illustrate the point at issue by a reference to a remarkable paper[1] by Dr. James Mackenzie, in which he presses home, in a masterly way, a criticism of the prevalent tendency of the methods of clinical teaching, and points the way to a better and fuller realisation of the resources in the talents of our teachers and the material at their disposal, on which the advance of

[1] On the Teaching of Clinical Medicine, Brit. Med. Jour., Jan. 3rd, 1914.

medical science and art depends. He would shift the focus of observation to the earlier stages, to the beginnings, or first manifestations, of disease, not merely with a view to prevention, but as the only scientific way of at once elucidating the graver morbid issues, and of escape from the hopeless bondage to terminal conditions that are apt to assume the tyrannous form of abstract entities, as foreign to, or superposed upon, the life-process as one organic unity. (I interpret a most suggestive line of thought in my own feeble words.)

Now, I suggest that this principle should find its most fruitful application by extension to the study of the infant, including the pre-natal conditions onward to the school-age when the education authorities take up the task. It would be superfluous to emphasise, and impossible to over-estimate, the importance and significance of the material for observation available during this period, if it were not grievous that it has been so long overlooked. The infant at birth stands at the point of meeting and departure of the phylogenic and ontogenic ways; it is, in a sense, both an end and a beginning, an epitaph that implies a legacy: "*Etiam mortui valuit auctoritas.*" We see the human organism in the very process of making, and nowhere and never again can we hope to see displayed so clearly in operation all the fundamental physiological and psychological agencies in the drama of interaction with the environment, physical and social. At no time can we interfere with such power and precision, to control and direct the natural forces, and that is only to say that it is pre-eminently the opportunity for acquiring the true art of medicine; it is then that we can add something to the natural forces, that we can use, lead, conduct, and improve on nature by obedience to its laws; and this is Art.

It is passing strange, and will soon seem incredible, that students of medicine should have their ideas formed by academic lectures, by dissection of the adult cadaver, and by groping among terminal morbidities in the hospital wards, with no preliminary discipline from familiarity with the healthy human body, and notably that of the infant, save for a casual glance, in childhood, at a baby brother in its bath. Even in midwifery experience the mother occupies all attention, and the infant is relegated to the nurse, *until it gets ill*. I can only recall my own experience of clinical study in Scotland and in one of the leading London hospitals, followed by nearly 30 years of practice, public and private, to the awakening revelation that befell me at the infant consultations conducted at the St. Marylebone Dispensary by Dr. Eric Pritchard. It is true that I was fortunate in coming under the influence of a master of the art (I may not here express my acknowledgments), but the experience of watching and handling under guidance an endless stream of naked infants from the earliest ages brought home to me the preposterous error of my former ways—"preposterous" in the literal sense of putting last that which should be first—while my eyes were opened to a new organon, the instrument of a true science and art of medicine.

Apart from the remarkable results obtained in individual cases the work opens up a wider vista, as from a central and higher standpoint as distinguished from a more or less blind groping at the circumference, among the partial, temporary, and contingent. In the light of this experience I see that we must divest ourselves of crude notions of personality—or let me say of organism—as an exclusive end-term in the life process, to replace it by the idea of a channel or thoroughfare, implying issues underlying and beyond and above the individual as he falls into our hands as a "case" for treatment. This is a conclusion, trite enough, which gets a new meaning from observation of the relations of the mother and the child under the influence of a new art, with immensely important implications for the reordering of society.

Dr. D. Forsyth has referred recently to one of the results of the new movement in the recognition of "the direct bearing of medical science on all matters relating to childhood." I would agree and at the same time I would reverse the terms of the statement to get an even fuller measure of truth.

I am, Sir, yours faithfully,

ERNEST ROBERTS, M.B., D.P.H.

Temple Fortune-lane, N.W., April 1st, 1914.

ARTIFICIAL PNEUMOTHORAX.

To the Editor of THE LANCET.

SIR,—May I draw attention to the existence of an international association, for the study and exchange of ideas on the subject of therapeutic pneumothorax? Professor Forlanini, honorary president of the association, has kindly altered the plan of his journal, *Rivista delle Pubblicazioni sul Pneumotorace Terapeutico*, so as to meet the requirements of the association's members. Originally published in Italian only, it will in the future contain reviews of recent papers on pneumothorax in English, German, and French. It will be published at irregular intervals, and sent free to every member of the association, the annual subscription to which is 8*s*. I shall be pleased to receive and forward this subscription to the association's secretary, Professor Carpi, and to supply any further information on the subject that it is in my power to give.

I am, Sir, yours faithfully,

CLAUDE LILLINGSTON.

South View, Elm Grove-road, Gorleston-on-Sea, April 5th, 1914.

THE PUBLIC HEALTH (OPHTHALMIA NEONATORUM) REGULATIONS, 1914.

To the Editor of THE LANCET.

SIR,—Having been abroad I have only now seen the letter of your correspondent "Energy" in THE LANCET of Feb. 28th. There is one serious error in that communication. It states that "no provision is made in these Regulations for the enforcement of any penalties on practitioners or midwives who do not obey them." The Regulations are made by the Local Government Board under powers alleged to be conferred on them by Section 130 of the Public Health Act, 1875. The concluding clause of that section imposed a penalty not exceeding £50 on "any person wilfully neglecting or refusing to obey or carry out" such Regulations. That final clause was repealed by the Public Health Act, 1896, and the penalty was raised to a maximum of £100, and in the case of a continuing offence to a further penalty not exceeding £50 for every day during which the offence continues. A medical man may therefore readily, by a neglect to notify one case, run the risk of having his income for the year confiscated!

A careful reading of Section 130, referring specifically as it does to "cholera and such other diseases," the application to it of the *ejusdem*

generis principle of the lawyers, and a consideration of the absurd penalty imposed, I think, make it quite clear that it was never intended that the Board should be empowered to issue such Regulations as those under consideration, or even the Tuberculosis Regulations issued under the same section. It would also appear equally clear that the Board has not always taken their present view of their powers under this section; otherwise the Infectious Disease (Notification) Act, 1889, and various other local Acts need not have been passed. It seems difficult to avoid the conclusion that there may be some amount of doubt as to the powers of the Board to impose duties (compelling even prepostage of letters) on large sections of the community, such as medical men and midwives, and with such exorbitant possible penalties. I say without fear of contradiction that such was never the intention of the Legislature on the passing of the section. Possibly an opportunity of testing the validity of these Regulations or of the Tuberculosis Regulations may arise in the event of a prosecution under them. I am, Sir, yours faithfully,

March 28th, 1914. LEX.

THE NATIONAL INSURANCE ACT.

INQUIRIES AT THE INSURANCE COMMISSION.

ON March 20th and 21st the Inquiry Committee set up under the Insurance Act and Regulations held sittings at the Insurance Commission, Buckingham Gate, London, to consider representations from two Insurance Committees alleging that the continuance of certain practitioners on the panel would be prejudicial to the efficiency of the medical service of the insured. The Inquiry Committee consisted of Mr. J. F. Williams, barrister-at-law (chairman), Dr. T. M. Carter, and Dr. C. H. Milburn. The first inquiry on March 20th was into a representation made by the Gloucester County Borough Insurance Committee in respect of Dr. O. A. Gee, who was legally represented. The allegations were that Dr. Gee failed to give proper attention to an insured person and that he had given certain sickness benefit certificates without having himself seen the persons in respect of whom these were issued. Dr. Gee admitted through his representative that in regard to the issue of certificates he had committed an indiscretion and expressed regret. Dr. Gee himself, in the course of his sworn evidence before the Inquiry Committee, said that he now realised the danger of the course he had pursued in issuing the certificates, while it was mentioned during the proceedings that a petition against removal of his name from the panel, signed by more than 800 of the insured persons on his list, had been sent to the Insurance Commissioners. The second case was that of Mr. R. F. Granger, against whom allegations were made by the Liverpool Insurance Committee. Mr. Granger did not attend or put in any defence, while at the time of the inquiry officials of the Insurance Committee had been unable to find him. It was alleged that on one occasion during 1913 he could not be found at the address at which he had undertaken to give treatment and that he had appointed no deputy during his absence. At various times the Liverpool Insurance Committee had been obliged to make arrangements for insured persons on Mr. Granger's list to receive attention from another medical practitioner. In each case the Inquiry Committee announced that it would consider the report which it would make to the Insurance Commissioners, and the decision of the Commissioners has now been announced. In the case of Mr. Granger the Commissioners are satisfied that his continuance on the list of medical practitioners would be prejudicial to the medical service of the insured. They have accordingly directed, in accordance with the powers given them in Section 15, I., B, of the Insurance Act and the Regulations, that his name be removed forthwith from the list. In the case of Dr. Gee they have come to a similar decision; but they have informed the Gloucester Insurance Committee that in their opinion, having regard to the particular circumstances of the case, there would be no impropriety in the Insurance Committee acceding to any application made by Dr. Gee on or after Jan. 1st next to be restored to the list.

THE DISTRIBUTION OF UNALLOTTED FUNDS.

When the Insurance Commissioners issued new regulations to legalise the distribution of funds accumulated in respect of insured persons who had not chosen a doctor, the London Insurance Committee expressed some doubt whether the regulations were retrospective and applied to money already accumulated, and it was decided to take legal advice upon the point. The opinion of Mr. Danckwerts, K.C., was received on April 2nd. To the question, "Can the committee now distribute?" Mr. Danckwerts said:

> The answer is in the negative. Nothing can be distributed to the practitioners unless the practitioner is by his contract entitled to something, and then he can get only what he is entitled to by his contract.

On the question whether the money could be used for providing nursing, or be returned to insured persons, or otherwise utilised for the benefit of insured persons, Mr. Danckwerts thought the fund could not be utilised for returning anything to insured persons who had not been accepted or imposed by allocation on some practitioner's list. Section 21 of the Act contained machinery by using which the funds might be utilised for nursing purposes, provided it was prescribed by the proper authority that the sums so expended should be treated as expenditure under the head of medical benefit.

Dr. A. R. Eates, 12, Thayer-street, Manchester-square, acting in behalf of the medical practitioners having only a small number of panel patients, has addressed a letter to the members of the London Insurance Committee with regard to the disbursement of the "surplus" funds in London. The letter points out that of the 1475 medical practitioners on the London panel more than 600 have small lists, while not more than 250 have lists exceeding 1800. It maintains that doctors with small lists do not obtain the benefit of the insurance principle, insured persons as a rule only coming on their lists when ill. It asserts that the records of the past year will show that most doctors with small lists attended professionally from 50 to 80 per cent. of their insured clients, and received from 4*d.* to 1*s.* per attendance; whereas only in exceptional cases did doctors with a list of 1500 attend more than 25 per cent. of the persons on their lists. Had the allocation of the insured been made as required by the Act, it is contended

that these discrepancies would not now exist, or certainly not in the same degree.

INSURANCE AND VOLUNTARY HOSPITALS.

The presentation and adoption of the report of the Nottingham Hospital Saturday Committee recently gave occasion for discussion as to the effect of the Insurance Act in checking subscriptions to hospitals. The general opinion of delegates who spoke appeared to be in accord with the views expressed in the report that State Insurance was to a great extent responsible for a somewhat marked falling off of income, but that slackness in some trades and industrial unrest were contributory causes. It was also suggested that many insured persons and others, some of whom were not affected in any way by the Act, were making it an excuse for withholding subscriptions to medical charities. It was urged that it should be recognised by all that the Act did not affect the position of those for whom treatment as in-patients in a hospital was a necessity, and the executive body responsible for the report laid stress upon the fact that the monthly board of the Nottingham General Hospital did not in any circumstances claim the sick pay of insured persons under treatment in the hospital.

NON-INSURED MEMBERS OF SOCIETIES AT LAUNCESTON.

At a meeting of non-insured members of Friendly Societies at Launceston recently a subcommittee reported the result of negotiations with the medical men of the district for attendance upon them. It was stated that it had been agreed that members who had joined the societies before January, 1913, should be attended at 9s. per annum irrespective of income; that members who joined after that date should be treated at the same rate if their incomes were below £2 a week; and that members living more than two miles from their medical man's surgery should be treated at 2s. extra, these being the terms adopted in the county of Devon.

THE TREATMENT OF TUBERCULOSIS IN GLASGOW.—The twelfth annual report of the council of the Glasgow and District Branch of the National Association for the Prevention of Consumption and other Forms of Tuberculosis states that owing to the operation of the National Insurance Act changes have had to be effected in the methods by which the association has been accustomed to promote its objects. During the year 195 cases were admitted to the sanatorium at Bellefield, Lanark, which, added to those previously reported on, makes the total of 1164 patients who have been treated since the opening of the institution in November, 1904. Of 194 patients dismissed during the year 36 had the disease apparently arrested, 45 were much improved, 66 were improved, while 21 were described as "not improved." The income has not only been sufficient to meet the ordinary expenditure for the year, but to permit of a balance of almost £89 being carried to extraordinary income. The principal increase was attributable to the greater number of patients treated and to the sums received under arrangement on account of those patients entitled to sanatorium benefit under the Insurance Act. Regarding the proposed transference of dispensary and sanatorium benefit to the corporation of Glasgow, the report states that at present the council has under consideration an offer from the corporation to acquire Bellefield Sanatorium for the sum of £10,000, subject to the condition that the association should employ that sum, and any revenue accruing therefrom, on behalf of persons resident in the city suffering from tuberculosis who might require assistance over and above the treatment provided by the corporation under its statutory powers. At an early date the council of the association intends to lay before the association and the ladies' auxiliary proposed new spheres of operation.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The undermentioned diplomas have been conferred upon the following candidates, who have complied with the respective by-laws:—

M.R.C.S.—Tottakat Krishna Menon, M.B., B.S. Madras, Madras University and Charing Cross Hospital; and Philip Savage, Guy's Hospital and Durham University.

L.D.S.—Henry Montague Browne, Birmingham University.

UNIVERSITY OF LONDON.—At the Second Examination for Medical Degrees, Part II., for internal and external students, held recently, the following candidates were successful:—

Ivor Aubrey, University College, Cardiff, and University College; Augustus Rollo Balmain, University of Birmingham; Charles Douglas Banes, King's College; Christopher Percival Barber, King's College and Charing Cross Hospital; Harold John Bensted, Guy's Hospital; Richard Vincent Bevan, King's College and Charing Cross Hospital; Christian Frederick Beyers, St. Bartholomew's Hospital; Gilbert Blurton, University of Birmingham; Marian Noel Bostock, London (Royal Free Hospital) School of Medicine for Women; Harold George Broadbridge, London Hospital; William Wallace King Brown, St. Thomas's Hospital; Louis Arthur Célestin, University College; John Eric Cheesman, St. Mary's Hospital; Clement Clapton Chesterman, University of Bristol; Hetty Ethelberta Claremont, London (Royal Free Hospital) School of Medicine for Women; Ailwyn Herbert Clarke, St. Thomas's Hospital; Walter Herbert Coldwell, King's College and Westminster Hospital; Julien David Constantin, St. Bartholomew's Hospital; Mervyn Clement Cooper, London Hospital; Raghunath Ganesh Dani and Mahmoud Abu Bakr Demerdash, University College; Hilda Margaret Denton, London (Royal Free Hospital) School of Medicine for Women; Elizabeth Cowper Eaves, B.Sc., Edinburgh School of Medicine for Women and University of Sheffield; Arthur William Foster Edmonds, Westminster Hospital; Florence Marjory Edwards, London (Royal Free Hospital) School of Medicine for Women; Leonard Wynne Evans, St. Bartholomew's Hospital; Guy Fehrsen, London Hospital; William Fletcher-Barrett, King's College; Jean Louis Roger Fortier, St. Bartholomew's Hospital; Andrew Radburne Fuller, St. Mary's Hospital; William Lawson Mabson Gabriel, University of Leeds; Arthur Edwards Gravelle, King's College; Hugh Morgan Gray, Guy's Hospital; Llewellyn Grey and Grace Mary Gulston, University College, Cardiff; Hilda Mary Halliday, London (Royal Free Hospital) School of Medicine for Women; Richard Brunel Hawes, St. Thomas's Hospital; William Broke Heywood-Waddington, St. Bartholomew's Hospital; Patrick Hughes, St. Mary's Hospital; John Basil Hume, St. Bartholomew's Hospital; Helen Ingleby, London (Royal Free Hospital) School of Medicine for Women; David Bruce Stewart Jones, King's College and Charing Cross Hospital; Percy Tudor Jones, University College, Cardiff; James Kyle, Guy's Hospital; Edgar Howard Lake, Middlesex Hospital; Herbert John Leviseur, Guy's Hospital; David John Adams Lewis, London Hospital; Harold Warburton Lewis, Middlesex Hospital; Annie Lloyd, London (Royal Free Hospital) School of Medicine for Women; Ifor Hughes Lloyd, King's College; †Katharine Lloyd, London (Royal Free Hospital) School of Medicine for Women; Vernon Edmund Lloyd, Guy's Hospital; *John Edward George McGibbon, University of Liverpool; Sydney Alan Stormer Malkin, University College; Francis Courtenay Mason, B.A., Middlesex Hospital; Duncan Menzies, St. Mary's Hospital; Gladys Mary Miall-Smith, London (Royal Free Hospital) School of Medicine for Women; Geoffrey Moulson, St. Thomas's Hospital; William Howard Nicholls, Guy's Hospital; Donald Craig Norris, London Hospital; Ray Verner Norton, London (Royal Free Hospital) School of Medicine for Women; Jehangir Hormusji Oonvala, Grant Medical College, Bombay; Eleanor Joyce Partridge and Enid Maud Pfeil, London (Royal Free Hospital) School of Medicine for Women; John William Glanmor Phillips, St. Mary's Hospital; Cyril Valentine Pink, St. Thomas's Hospital; Rhys Vaughan Powell, King's College and University College, Cardiff; Sydney Devenish Rhind, King's College and St. George's Hospital; Theodore Ernest Roberts, University of Glasgow; Kenneth Mackinnon Ross, London Hospital; †Ephraim Sakoschansky, University College; Basil Sampson, Guy's Hospital; Paul Robert John Schmidt and †Morris Schwartz, University College; Alan Selby-Green, Middlesex Hospital; Ahmad Shafeek and George Harold Sims, St. Thomas's Hospital; Glyde Philip Tatton, London Hospital; Lily Dorothea Taylor, London (Royal Free Hospital) School of Medicine for Women; Rufus Clifford Thomas, University College and University College, Cardiff; John Ferdinand Twort, B.Sc., and Douglas James Valentine, London Hospital; William John Vance, Herbert Stewart Wacher, and Morris John Theodore Wallis, Guy's Hospital; Cyril James Berkeley Way, Middlesex Hospital; James de Silva Wijeyeratne, University College; Thomas Pearse Williams, Middlesex Hospital; Alfred Williams-Walker, University of Birmingham; Alban Wilson, University College; and Cecil William Wilson, London Hospital.

* Distinguished in Anatomy. † Distinguished in Pharmacology.

UNIVERSITY OF DURHAM: FACULTY OF MEDICINE.—At the Convocation held on March 28th the following degrees were conferred:—

Doctor of Medicine.—Sam Phillips Bedson, William James Nathanie Vincent, and James Carruthers Young.

Doctor of Medicine for Practitioners of Fifteen Years' Standing.—Henry William Collier, George Fitzjames Darker, John Shortt Evers, Duncan McArthur, and George Harper Pearce.

Bachelor of Medicine (*M.B.*).—William Bell, Cyril Duncan, Walter Armstrong Elliott, Idris David Evans, Laurence Heber Warneford Iredale, Robert Rutherford Lishman, Edward Rowland Alworth Merewether, Sydney Ellington Murray, William Somerville Murray, and Frederick John Nattrass, College of Medicine, Newcastle-upon-Tyne; Roger Paul Ninnis, Guy's Hospital; and Charles O'Hagan, Ivan Miller Pirrie, Evelyn Ritson, William Kerr Russell, Arthur Sutcliffe, and Sydney Thompson, College of Medicine, Newcastle-upon-Tyne.

Bachelor of Surgery (*B.S.*).—William Bell, Walter Armstrong Elliott, Laurence Heber Warneford Iredale, Robert Rutherford Lishman, Edward Rowland Alworth Merewether, Sydney Ellington Murray, William Somerville Murray, and Frederick John Nattrass, College of Medicine, Newcastle-upon-Tyne; Roger Paul Ninnis, Guy's Hospital; and Charles O'Hagan, Ivan Miller Pirrie, Evelyn Ritson, William Kerr Russell, Arthur Sutcliffe, and Sydney Thompson, College of Medicine, Newcastle-upon-Tyne.

Bachelor of Hygiene (*B.Hy.*).—George Cuthbert Murn M'Gonigle and John Steedman.

The following Diplomas and Licence were also granted:—

Diploma in Public Health (*D.P.H.*).—George Cuthbert Murn M'Gonigle and John Steedman.

Licence in Dental Surgery (*L.D.S.*).—Wallace Edwin Hurford, College of Medicine, Newcastle-upon-Tyne.

UNIVERSITY OF SHEFFIELD.—Mr. A. E. Barnes, M.B., Ch.B. Sheffield, M.B. Lond., M.R.C.P., has been appointed lecturer in materia medica, pharmacology, and therapeutics, and Mr. Wilfred Jevons, B.Sc. Lond., junior lecturer and demonstrator in physics.

THE HEALTH OF BUDLEIGH SALTERTON (DEVON).—The medical officer of health (Mr. C. Beesley) in his annual report for 1913 states that the death-rate of Budleigh Salterton was 13·8 per 1000 and the birth-rate 11·6 per 1000. Mr. Beesley states that the "age distribution" is the principal cause of the low birth-rate.

DONATIONS AND BEQUESTS.—By will the late Mr. Robert Kelsey Hill, Doncaster, has left £1000 each to the Huddersfield Infirmary, the Dewsbury Infirmary, the Wakefield Infirmary, and the Doncaster Infirmary.—The late Miss Elizabeth Catherine Wagstaffe, of Cheetham Hill, Manchester, has left by will £500 each to the Salford Royal Hospital and the Cancer Pavilion, Manchester.—The late Mr. James Gresham, of Ashton-on-Mersey, has left £500 each to the Manchester Royal Infirmary, the Salford Blind Hospital, the Old Trafford Blind Asylum, and the Old Trafford Deaf and Dumb School.—Miss Helen Murray, of Edinburgh, has given £8000 to the Western Infirmary, Glasgow, for the purpose of naming a ward in memory of her late brother and sister.

UNIVERSITY COLLEGE HOSPITAL.—At the annual general meeting of the members of the corporation of University College Hospital the Duke of Bedford was re-elected president. The chairman, Captain the Hon. E. S. Dawson, moving the adoption of the report and accounts for the hospital and medical school, congratulated the meeting on the general satisfactory conditions which prevail in every department. He alluded to the valuable services of the honorary medical and surgical staffs, and spoke of the re-establishment of an inoculation department under the superintendence of Dr. F. H. Thiele, through the generosity of Sir Harry Waechter, as one of the events of the year. The opening of a tuberculosis dispensary in the hospital would enable them to deal with those cases in the sphere allotted to the hospital in the most satisfactory manner. Their thanks were again due to the Ladies' Association, in which Lady (Rose) Bradford continued to take such an active interest, and equally to the junior branch, over which Mrs. Blacker presided. The chairman proceeded to speak of their experiences regarding the working of the National Insurance Act. While on the one hand a certain amount of money had been received for services rendered, on the other hand the workmen's contributions continue to decrease. It was probable that the receipts referred to might increase in future years, but it could not be too often emphasised that under the Insurance Act only minor cases were treated by the panel doctors, and there was no diminution whatever in the calls made on the hospital for the more serious cases. The medical school showed a small increase in the number of students. The loyalty of the students was illustrated in a practical manner during the coal strike, when they went to the depôts and brought back 30 tons of coal for use in the hospital. Sir Ernest Hatch, the treasurer, regretted that he again had to record a heavy deficit. Practically they were £7000 to the bad, and a considerable portion of this sum had to be made up out of receipts from legacies. The report was adopted.

The King has appointed Sir Herbert Smalley, M.D. Durh., to be one of the Commissioners under the Prison Act, 1877.

Dr. H. R. Wilson, tuberculosis physician to the Welsh National Memorial to King Edward VII., Merthyr Tydfil, has been appointed by the Southwark borough council tuberculosis officer for the borough.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Tropical Diseases Research Fund.

DURING 1913, as the annual report of the Advisory Committee shows, the expenditure of the Tropical Diseases Research Fund exceeded the revenue. The revenue was £3445 and the expenditure £3600. It appears that the excess of expenditure was met, as in the previous year, by drawing on the accumulated balance of the fund. The committee places upon record the importance of increasing the amount at its disposal, having regard to the large number of directions in which important research could be carried on if the means at its disposal could be permanently increased. The report notes how the grants to the London and Liverpool Schools of Tropical Medicine and to the Universities of London and Cambridge have been expended. It goes on to state that the committee were consulted on various matters during the year by the Secretary of State for the Colonies, including the important question of the measures to be taken to safeguard India and the eastern colonies against the danger of the introduction of yellow fever on the opening of the Panama Canal. Reports received from certain colonies and protectorates on anti-malarial measures are appended.

Death Registration and Burials Bill.

A memorandum explains the purposes of this measure, introduced by Mr. RADFORD and read a first time. Its object is to give effect to the principal recommendations put forward in 1893 by the Select Committee on Death Certification, and intended to guard against (1) crime, and (2) premature burial. The Committee reported that they were much impressed "with the serious possibilities implied in a system which permits death and burial to take place without the production of satisfactory medical evidence of the cause of death. It is a most important duty of society to guard its members against foul play, and it appears to your Committee that, as far as may be, it should be made impossible for any person to disappear from his place in the community without any satisfactory evidence being obtained of the cause of his disappearance. Your Committee, fortified with the weighty opinions of the witnesses who have appeared before them, have arrived at the conclusion that uncertified deaths should, as a class, cease to exist, and that means should be devised whereby a medical certificate should be obtained in every case not certified by a registered medical practitioner in attendance." The Departmental Committee on Coroners, which sat in 1909, in their second report state that "It is no fault of the law if premature burials do not take place. The present law of death certification offers every opportunity for premature burial and every facility for the concealment of crime. In connexion with the law of coroners, we think that ..... a certificate of death should not be accepted from a medical practitioner unless it states that he has, by personal inspection of the body, satisfied himself as to the fact of death. At present he may certify merely on the information given by the relatives, and we have had evidence that many certificates have been carelessly or even recklessly given." During the seven years 1907 to 1913 inclusive there were 47,911 deaths in England and Wales, the causes of which were not certified.

HOUSE OF LORDS.

WEDNESDAY, APRIL 1ST.

Midwives (Scotland) Bill.

Lord BALFOUR of BURLEIGH, in introducing this measure in the House of Lords last week,[1] said that some years ago an Act for a similar purpose was passed for England. Opinion was not sufficiently ripe at that time to extend similar proposals to Scotland. Now opinion in Scotland, he believed, was unanimous that it was necessary to have a measure of this kind. A measure had been introduced into the House of Commons in previous years to regulate the practice of midwives in Scotland. He had made some

[1] THE LANCET, April 4th, 1914, p. 1008.

changes in the text of it in his Bill because he had been in consultation with the Privy Council and the Scottish Office and desired to meet their views. The main objects of the Bill were to provide that after 1916 no woman who was not certified as competent should take or use the title of midwife, and after 1921 further limitations were to be put on women who attended at childbirth and those who were not certified. All this was subject to reasonable provisions to protect the interest of those who were now practising. The Bill also constituted a Central Midwives Board for Scotland to carry out the Act under the Privy Council, and it set out at some length the powers and duties of the Board. There were provisions for the discipline of midwives, for expenses, and for dealing with offences. The local authorities for carrying out the provisions of the Act and for the supervision of the certified midwives would be the county councils and the town councils. When there were district committees where the counties were divided into districts these would have duties under the Bill. It was provided that the term "local authority" should have the same meaning as in the Public Health Act, 1897. The reason for that was that they were anxious to avoid the prejudice created in the minds of the medical profession and amongst midwives if they were to any extent to be put under the Poor-law. He had also been in communication with the Committee of the British Medical Association for Scotland, and he had accepted one or two suggestions which that body had put forward. The Local Government Board for Scotland were in favour of legislation on the lines of this Bill. The Medical Service Committee for the Highlands and Islands had passed a resolution strongly advocating a Bill of this kind. The medical officers of health of all the large towns in Scotland which he knew were in favour of it. The Scottish maternity hospitals for the four great centres of medical education were also in favour of it. The Nursing Association, which held an important conference at Glasgow last month, passed a resolution urging on the Secretary for Scotland the great need for an Act for the protection of women in childbed and the supervision of midwives. One of the matters which had ripened opinion in Scotland in favour of the Bill had been certain provisions of the National Insurance Act. He believed that the Insurance Commissioners also thought that the Bill was necessary for the poorest women in the community.

Earl BEAUCHAMP, on behalf of the Government, said that whilst they could not pledge themselves as to the details of the Bill, thought that it would prove of inestimable value.

The Bill was then presented and read a first time.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 25TH.

Coroners' Inquests.

Mr. HIGHAM asked the President of the Local Government Board what were the new Regulations which had been issued to coroners which made it necessary for the holding of inquests in every case where the deceased might not have been attended by a regular practitioner.—Mr. HERBERT SAMUEL replied: No Regulations have been issued to coroners. The Regulations recently issued to Registrars of Births and Deaths do not have the effect suggested or in any way diminish the discretion of the coroner as to whether an inquest is or is not necessary.

WEDNESDAY, APRIL 1ST.

Nursing Home in Sierra Leone.

Mr. MACCALLUM SCOTT asked the Secretary of State for the Colonies whether, before sanctioning the proposed rule prohibiting patients in the Sierra Leone nursing home from being treated by their private practitioners, he would consider the peril to recovery which might arise through denying to patients suffering from a disease the continued medical skill of their regular medical practitioners who alone would possess the history of the case.—Mr. L. HARCOURT replied: My honourable friend may rest assured that full consideration will be given to this and all other aspects of the question.

Mr. MACCALLUM SCOTT asked the right honourable gentleman whether he was aware that a white man was recently removed to the Sierra Leone nursing home suffering from blackwater fever; that he had previously been treated by a native doctor with high qualifications in whose skill in the treatment of tropical diseases confidence was reposed not only by the native population but by many of the white population; that the patient applied to the authorities of the nursing home to allow him to be treated by his regular medical attendant, but that in view of the proposed new rule this was at first forbidden, but afterwards permitted; and whether he had received any representations of public opinion from Sierra Leone on the subject of the proposed treatment.—Mr. L. HARCOURT answered: The circumstances of the case to which my honourable friend refers are not within my knowledge. I am not sure that I understand the last part of the question, but I have received no representations of public opinion from Sierra Leone on the subject of the proposed new rule to which my honourable friend refers.

Small-pox in Germany.

Mr. POINTER asked the President of the Local Government Board to state the number of small-pox cases and deaths in the German empire and in Prussia respectively during each of the years 1892 to 1912.—Mr. HERBERT SAMUEL wrote in reply: The number of cases of and deaths from small-pox in Germany and in Prussia respectively since 1891 are given in the appended table so far as figures have been published up to the present date. The figures as to cases and deaths are obtained from the final official reports of the countries concerned. The figures as to deaths differ slightly from those published in the English Registrar-General's annual reports, which have been derived from unrevised earlier statistics.

Small-pox.

Year.	German Empire.		Prussia.	
	Cases.	Deaths.	Cases.	Deaths.
1892	?	108	?	91
1893	?	157	?	137
1894	?	88	?	77
1895	?	27	?	24
1896	92	10	70	8
1897	45	5	29	5
1898	129	15	112	12
1899	346	28	314	25
1900	382	49	349	46
1901	375	56	325	49
1902	114	15	88	13
1903	172	20	93	14
1904	189	25	122	17
1905	212	30	77	11
1906	256	47	163	30
1907	345	63	142	23
1908	434	65	390	61
1909	247	26	195	24
1910	236	34	168	24
1911	288	37	230	30
1912	279	?	170	19

Figures obtained as follows:—

German Empire, 1892–1910, "Medizinal Statistische Mitteilungen aus dem Kaiserlichen Gesundheitsamte." XVI. Band, Heft 1.
" " 1911 ditto. Heft. 2.
" " 1912 "Veröffentlichungen des Kaiserlichen Gesundheitsamtes, 1912."
Prussia, 1892–1900, "Medizinal Statistische, &c." XVI. Band, Heft 1.
" 1901–1912, "Das Gesundheitswesen des Preussischen Staates im Jahre 1912."

Funds for Sanatorium Benefit in Wales.

Mr. GODFREY LOCKER-LAMPSON asked the honourable Member for St. George's-in-the-East, as representing the National Insurance Commissioners, whether his attention had been called to the statement of the medical officer of the Welsh Insurance Commission that the number of insured cases receiving domiciliary treatment was small and did not warrant the sum spent for them—namely, 6*d.* per insured person, paid to the panel doctors; whether several Insurance Committees had found themselves short of funds for sanatorium benefit in consequence of the above 6*d.* being diverted from them; and whether he proposed to make a temporary grant to needy Insurance Committees so that consumptive insured persons might receive the sanatorium benefit which they needed and to which they were entitled.—Mr. WEDGWOOD BENN answered: My right honourable friend understands that the report contained in the honourable Member's question does not accurately represent the observations of the officer in question. These were addressed solely to the circumstances of a particular area in which domiciliary treatment had in many cases been given without formal recommendation for sanatorium benefit. With regard to the latter part of the question I would remind the

honourable Member that expenditure upon domiciliary treatment is part of the committee's expenditure upon sanatorium benefit as a whole, and that extensive grants are already provided towards the cost of comprehensive schemes comprising arrangements for the treatment of insured persons.

Mr. WORTHINGTON EVANS: Has a surcharge been made in cases where domiciliary treatment has been given without advice?—Mr. WEDGWOOD BENN: No, it will depend on the circumstances of the case.

Mr. WORTHINGTON EVANS: In the circumstances of the case to which the honourable Member has referred will it be so?—Mr. WEDGWOOD BENN: I cannot say.

THURSDAY, APRIL 2ND.

The International Opium Convention.

Answering Mr. THEODORE TAYLOR, Sir EDWARD GREY, the Foreign Secretary, stated that since the end of January he had not been informed of the adherence of any Power then outstanding to the International Opium Convention. The Powers that had not yet adhered to the International Opium Convention were being constantly pressed to do so, and it was confidently hoped that the difficulties which stood in the way of their adhering might shortly be overcome. It was very desirable that the ratification of other Powers should be secured as well as that of His Majesty's Government.

Treatment of Tuberculosis in Ireland.

Mr. LARDNER asked the Chief Secretary to the Lord Lieutenant of Ireland whether any of the county authorities in Ireland, in preparing schemes for the treatment of tuberculosis, proposed to treat non-pulmonary tuberculosis; and, if so, would he state the names of such authorities and say whether such treatment was proposed to be at the patients' homes, by dispensaries, or in sanatoria.—Mr. BIRRELL replied: Provision for non-pulmonary tuberculosis is generally included in county schemes, and the county infirmaries of Armagh, Waterford, Louth, Londonderry, Dublin, Mayo, Queen's County, King's County, Tyrone, Carlow, Leitrim, Galway, Cork (2), Fermanagh, Sligo, Meath, and Antrim have been approved by the Local Government Board for the purpose. Treatment will be provided institutionally or otherwise according to the circumstances of the case.

Mr. LARDNER asked the right honourable gentleman what counties in Ireland were providing their own sanatoria for the treatment of tuberculosis under the National Insurance Act, Part I., and how many were contracting for accommodation for their patients in proprietary institutions; whether any of the county sanatoria were in full working order; and, if so, would he state the counties and the total number of beds provided under each system.—Mr. BIRRELL said in reply: The county boroughs of Dublin, Belfast, and Cork, and the counties Clare, Limerick, Cork, Galway, Tipperary (North Riding), Dublin, Sligo, Tyrone, Armagh, Down, and Monaghan will have their own sanatoria. Twenty-three counties are contracting for accommodation (including arrangements of a provisional character) for their own patients in other institutions. The sanatoria in Dublin county borough and county, Cork county borough and county, and Clare county are in full working order. As regards the number of beds provided, the figures (including institutions in contemplation) are: county institutions, 932 beds; contracted beds, 270.

Mr. LARDNER asked the honourable Member for St. George's-in-the-East whether any councils of counties or county boroughs in Ireland had agreed to pay half of any expenditure on the treatment of tuberculous insured persons over and above the money provided for sanatorium treatment under the National Health Insurance Act, if so, would he give the names of such authorities; would he state whether any Insurance Committees had represented to the council of their county or to the Treasury that the amount available for defraying the cost of sanatorium treatment to insured persons resident within their area was already, or was likely to be, insufficient to meet the estimated expenditure; if so, would he give the names; whether any grants under Section 17 had been made in Ireland; and, if so, would he state the amounts and the authorities to whom made.—Mr. WEDGWOOD BENN answered: Up to the present time one county council in Ireland—namely, Meath—has agreed to meet one-half of the anticipated deficiency under Section 17. The other half will be met by the Treasury in due course.

Declarations of Conscientious Objection to Vaccination.

Mr. YEO asked the President of the Local Government Board whether his attention had been called to the fact that owing to the somewhat confusing wording of the vaccination schedule which was given to parents at the time of registering the births of their children, and also on Form Q issued by vaccination officers, many parents were led to suppose they could make a declaration of conscientious objection to vaccination within four months and seven days of the birth of a child; and whether he could see his way to have the schedules and forms in question so altered as to make it unmistakable to parents that they must make their declarations within four months of the birth of their children.—Mr. HERBERT SAMUEL replied: I am aware that difficulties have arisen and I am taking steps to obviate them.

Special Nourishment for Tuberculous Patients.

Mr. CAWLEY asked the honourable Member for St. George's-in-the-East whether District Insurance Committees had power at their own discretion to allow special nourishment to tuberculous persons discharged from sanatoria, or whether such nourishment could only be allowed when a tuberculosis officer recommended it for assisting the restoration of working capacity in other than hopeless cases.—Mr. WEDGWOOD BENN wrote in reply: The powers and duties of District Insurance Committees in connexion with the administration of sanatorium benefit are determined by the scheme adopted for the area in accordance with Section 59 of the National Insurance Act, 1911, and the Regulations made thereunder. Generally speaking, accessories in the form of special nourishment may be afforded to insured persons in receipt of domiciliary treatment where recommended on medical grounds. As the honourable Member is aware, however, it is the duty of the Insurance Committee to provide treatment and not to relieve destitution.

MONDAY, APRIL 6TH.

A Milk Substitute.

Mr. CHARLES BATHURST asked the President of the Local Government Board whether he was aware that it was proposed to sell as milk, in London and elsewhere, a liquid prepared from a species of soya bean, having the appearance and, to some extent, the flavour of cow's milk, but not possessing its nutritive or other qualities; whether the Board had powers and, if so, under what statute, to prevent the sale of such a product under the misleading denomination of milk; and, if so, whether it was proposed to exercise such powers.—Mr. HERBERT SAMUEL replied: I am aware of the product to which the honourable Member refers, but I am not prepared to express an opinion as to its nutritive qualities. If an article which is not milk is sold under that name it would be open to local authorities to take proceedings under the Sale of Food and Drugs Act against the vendor.

Treatment for Tuberculosis in Dependents of Insured Persons.

Mr. ASTOR asked the President of the Local Government Board whether a dependent of an insured person, who was treated for tuberculosis by a local authority undertaking treatment of tuberculosis for the whole population with the aid of the Hobhouse grant from the Treasury, was entitled to the same domiciliary treatment as might be given if sanatorium benefit was extended under Clause 17 of the National Insurance Act to dependents of insured persons.—Mr. HERBERT SAMUEL answered: Dependents are not entitled as a right to domiciliary treatment even if an Insurance Committee has extended sanatorium benefit to such persons. The matter is within the discretion of the Insurance Committee. Local authorities generally have not so far included domiciliary treatment in their schemes. The view that has been acted on is that the institutional side of these schemes should be fully developed before the question of providing domiciliary treatment is considered.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

CRAIG, EFFIE M. D., M.B., Ch.B. Edin., has been appointed Assistant Medical Officer of Health of Birmingham.

HARBOROW, GERALD, L.D.S. R.C.S. Eng., has been appointed Dental Surgeon to the Metropolitan Hospital, Kingsland-road.

STEEL, RUSSELL V., M.B., B.S. Durh., has been appointed House Surgeon at the West London Hospital.

THOMSON, RUBY, M.B., Ch.B. Edin., has been appointed School Medical Officer for the County of Stafford.

YORKE, COURTENAY, M.D. Liverp., M.B., B.S. Lond., F.R.C.S. Eng., has been appointed Honorary Laryngologist to the Liverpool Hospital for Consumption and Diseases of the Chest.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BARNSLEY, BECKETT HOSPITAL AND DISPENSARY.—Second House Surgeon, unmarried. Salary £100 per annum, with apartments, board, and laundry.

BARROW-IN-FURNESS, NORTH LONSDALE HOSPITAL.—House Surgeon. Salary £120 per annum, with residence, board, and laundry.

BEDFORD COUNTY HOSPITAL.—Assistant House Surgeon. Salary £80 per annum, with board, lodging, and laundry.

BETHLEM HOSPITAL.—Resident House Physician, unmarried, for six months. Salary at rate of £25 per quarter, with apartments, board, and washing.

BIRKENHEAD AND WIRRAL CHILDREN'S HOSPITAL, Woodchurch-road, Birkenhead.—House Surgeon. Salary £100 per annum, with board, residence, and laundry.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £220 per annum, with apartments, fire, light, and attendance.

BIRMINGHAM, ROYAL ORTHOPÆDIC AND SPINAL HOSPITAL, Newhall-street.—Clinical Assistant. Salary £25 per annum.

BOLTON INFIRMARY AND DISPENSARY.—Senior House Surgeon. Salary £150 per annum, with apartments, board, and attendance.

BRADFORD CHILDREN'S HOSPITAL.—House Surgeon. Salary £120 per annum, with board, residence, and laundry.

BRADFORD ROYAL INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, and washing.

BRISTOL GENERAL HOSPITAL.—House Physician and Casualty House Surgeon for six months. Salary £30 per annum, with board, residence, &c.

BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN.—House Physician. Salary £80 per annum, with board, rooms, attendance, and laundry.

BRISTOL ROYAL INFIRMARY.—Two House Surgeons, House Physician, and Throat, Nose, and Ear House Surgeon, all for six months. Salaries at rate of £100 per annum, with board, apartments, and laundry.

BURNLEY, VICTORIA HOSPITAL.—Second House Surgeon for six months. Salary at rate of £30 per annum, with residence, board, and washing.

BURY INFIRMARY.—Junior House Surgeon. Salary £100 per annum, with board, residence, and washing.

CARLISLE, CITY OF.—Assistant Medical Officer of Health, Tuberculosis and School Medical Officer. Salary £350 per annum.

CARLISLE, CUMBERLAND AND WESTMORLAND ASYLUM, Garlands.—Junior Assistant Medical Officer, unmarried. Salary £200 per annum, with board, lodging, and washing.

CARLISLE NON-PROVIDENT DISPENSARY.—Resident Medical Officer. Salary £200 per annum, with apartments.

CENTRAL LONDON OPHTHALMIC HOSPITAL, Judd-street, St. Pancras, W.C.—House Surgeon. Salary at rate of £50 per annum, with board and residence.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's-Inn-road, W.C.—Resident House Surgeon. Salary £50 per annum, with board and laundry.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W.—Clinical Assistants.

CHELTENHAM GENERAL HOSPITAL.—House Physician, unmarried. Salary £100 per annum, with board, lodging, and washing.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Senior House Surgeon. Salary £120 per annum, with board, apartments, and laundry.

CHICHESTER, WEST SUSSEX COUNTY MENTAL HOSPITAL.—Junior Assistant Medical Officer. Salary £200 to £250 per annum, with apartments, board, laundry, and attendance.

COLCHESTER, SEVERALL'S ASYLUM.—Fourth Assistant Medical Officer and Pathologist. Salary £210 per annum, with apartments, board, attendance, and washing.

CORNWALL EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £250 per annum.

DERBY COUNTY ASYLUM, Mickleover, Derby.—Junior Assistant Medical Officer. Salary £200 per annum, with board, lodging, and washing.

DERBYSHIRE COUNTY COUNCIL.—Assistant Tuberculosis Officer. Salary £300 per annum.

DEVONPORT, ROYAL ALBERT HOSPITAL.—House Surgeon, unmarried. Salary £50 for first six months, £75 for second six months, and at rate of £150 per annum during second year. Also Assistant House Surgeon, unmarried. Salary at rate of £75 per annum, with board and laundry.

DORCHESTER COUNTY ASYLUM.—Third Assistant Medical Officer. Salary £250 per annum, with board, lodging, &c.

DUDLEY, GUEST HOSPITAL.—Senior Resident Medical Officer. Salary £120 per annum, with board, residence, attendance, and washing.

DURHAM COUNTY COUNCIL.—Assistant Tuberculosis Medical Officer. Salary £300 per annum.

ECCLES AND PATRICROFT HOSPITAL.—House Surgeon. Salary £70 per annum, with board, washing, and lodging.

EDINBURGH ROYAL INFIRMARY.—Clinical Pathologist. Salary £250 per annum.

ESSEX, ADMINISTRATIVE COUNTY OF.—Assistant Tuberculosis Officer. Salary £300 per annum.

FOLKESTONE, ROYAL VICTORIA HOSPITAL.—Resident House Surgeon. Salary £100 per annum, with apartments, board, and laundry.

GLASGOW, VICTORIA INFIRMARY.—Assistant Surgeon.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway-road, N.—House Physician for five months. Salary at rate of £40 per annum, with board, lodging, and laundry.

GREAT YARMOUTH HOSPITAL.—House Surgeon, unmarried. Salary £140 per annum, with board, lodging, and washing.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Salary £100 per annum, with board, residence, and laundry.

HALIFAX ROYAL INFIRMARY.—Second House Surgeon and Third House Surgeon, unmarried. Salary £100 and £30 per annum respectively, with residence, board, and washing.

HASTINGS, EAST SUSSEX HOSPITAL.—Assistant House Surgeon. Salary at rate of £30 per annum, with residence, board, and washing.

HELLINGLY, EAST SUSSEX COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £250 per annum, with board, apartments, washing, and attendance.

HEREFORD COUNTY AND CITY ASYLUM.—Locum Tenens Assistant Medical Officer for three to four months. Salary £5 5s. per week, with board, lodging, and washing.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.—Assistant Casualty Medical Officer, unmarried, for six months. Salary £30, with board, residence, &c.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 40, Grove End-road, N.W.—Resident Medical Officer, unmarried, for six months. Salary at rate of £80 per annum, with rooms, board, laundry, and attendance.

HUDDERSFIELD ROYAL INFIRMARY.—Assistant House Surgeon. Salary £80 per annum, with board, rooms, and washing.

HULL ROYAL INFIRMARY.—House Physician, unmarried. Salary £100 per annum, with board and apartments.

HUNTINGDONSHIRE COUNTY COUNCIL.—Assistant County Medical Officer and Assistant School Medical Officer (female). Salary £300 per annum.

KETTERING AND DISTRICT GENERAL HOSPITAL.—Resident Medical Officer, unmarried. Salary £120 per annum, with board, residence, &c.

KIRKMABRECK PARISH, Creetown, Kirkcudbrightshire.—Medical Officer. Salary £40 per annum.

LEEDS MATERNITY HOSPITAL.—Honorary Medical Officer.

LEEDS, WEST RIDING ASYLUM, Menston.—Fourth Assistant Medical Officer. Salary £200 per annum, with board and apartments.

LIVERPOOL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Mount Pleasant.—Honorary Assistant Physician.

LIVERPOOL UNIVERSITY, FACULTY OF MEDICINE.—George Holt Chair of Physiology. Salary £700 per annum.

MAIDSTONE, KENT COUNTY ASYLUM.—Fourth Assistant Medical Officer, unmarried. Salary £200 per annum, with quarters, attendance, washing, &c.

MANCHESTER, ANCOATS HOSPITAL, Mill-street.—Honorary Physician and Honorary Surgeon.

MANCHESTER CHILDREN'S HOSPITAL (OUT-PATIENTS' DEPARTMENT), Gartside-street.—Medical Officer. Salary £180 per annum. Also Assistant Medical Officer for six months. Salary £50 per annum.

MANCHESTER, COUNTY ASYLUM, Prestwich.—Assistant Medical Officer, unmarried. Salary £250 per annum, with board, apartments, attendance, and washing.

MANCHESTER, MONSALL FEVER HOSPITAL.—Third Medical Assistant. Salary £130 per annum, with board, lodgings, and washing.

MANCHESTER ROYAL INFIRMARY.—Junior House Surgeon, unmarried, for six months. Board and residence provided. Also Resident Medical Officer and Resident Medical Officer at Convalescent Hospital, Cheadle. Salary £150 per annum each, with board and residence.

MERSTHAM, NETHERNE ASYLUM.—Locum Tenens for three and a half months. Salary 4½ guinea a week, with board, apartments, attendance, and laundry.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—House Physician, House Surgeon, Assistant House Physician, and Assistant House Surgeon for six months. Salary of House Physician and House Surgeon at rate of £60 per annum, and of Assistant House Physician and Assistant House Surgeon at rate of £40 per annum, with full board and washing in each case. Also Assistant Dental Surgeon.

NEWARK-UPON-TRENT HOSPITAL.—Resident Medical Officer, unmarried. Salary £100 per annum, with board, lodging, and laundry.

NEWCASTLE-UPON-TYNE, CORPORATION CITY HOSPITAL FOR INFECTIOUS DISEASES.—Resident Medical Assistant. Salary £200 per annum, with board, lodging, &c.

NEWCASTLE-UPON-TYNE, ROYAL VICTORIA INFIRMARY.—Resident Medical Officer and Assistant Resident Medical Officer. Salaries £200 and £150 per annum respectively, with board and residence. Also Medical and Surgical Registrars.

NORFOLK EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £250 per annum.

NORWICH, NORFOLK AND NORWICH HOSPITAL.—Casualty Officer, unmarried, for six months. Salary £80 per annum, with board, lodging, and washing.

NOTTINGHAM GENERAL HOSPITAL.—Assistant House Physician. Salary £100 per annum, with board, residence, and laundry.

PEMBROKESHIRE EDUCATION AUTHORITY.—Assistant School Medical Officer. Salary £300 per annum.

PORTSMOUTH CORPORATION MENTAL HOSPITAL.—Assistant Medical Officer, unmarried. Salary £225 per annum, with board, apartments, attendance, and washing.

PRESTON, COUNTY ASYLUM, Whittingham, Lancs.—Assistant Medical Officer, unmarried. Salary £250 per annum, with board, apartments, &c.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Senior House Physician. Salary £175 per annum, with residence, board, and laundry. Also Pathologist. Salary 120 guineas per annum. Also Honorary Medical Registrar.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Resident Medical Officer. Salary £100 per annum, with board, residence, and laundry.

READING, ROYAL BERKSHIRE HOSPITAL.—Second House Surgeon for six months. Salary at rate of £80 per annum, with lodging, board, and washing.

ROCHDALE INFIRMARY.—Senior House Surgeon, unmarried. Salary £110 per annum, with board, residence, and laundry.

ROTHERHAM HOSPITAL.—Assistant House Surgeon. Salary £100 per annum, with board, lodging, and washing.

ROYAL LONDON OPHTHALMIC HOSPITAL.—Assistant Surgeon.

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, King William-street, West Strand, W.C.—House Surgeon for six months. Salary at rate of £50 per annum, with board, residence, and laundry.

ST. MARK'S HOSPITAL FOR CANCER, FISTULA, AND OTHER DISEASES OF THE RECTUM, City-road, E.C.—Half-time Pathologist and Bacteriologist. Salary £100 per annum. Also House Surgeon. Salary £30 per annum, with board, lodging, and washing.

ST. MARYLEBONE INFIRMARY, Rackham-street, Notting Hill, W.—Second Assistant Medical Officer, unmarried. Salary £150 per annum, with apartments, rations, and washing.

ST. PANCRAS SOUTH INFIRMARY AND WORKHOUSE, Pancras-road.—Senior Assistant Medical Superintendent and Senior Assistant Medical Officer. Salary at rate of £175 per annum, with residential allowances.

ST. PETER'S HOSPITAL FOR STONE, &c., Henrietta-street, Covent Garden, W.C.—Junior House Surgeon for six months. Salary at rate of £75 per annum, with board, lodging, and washing.

SALFORD ROYAL, THE MANCHESTER CHILDREN'S, AND THE MANCHESTER NORTHERN HOSPITALS.—Joint Pathologist. Salary £250 per annum.

SALISBURY INFIRMARY.—Assistant House Surgeon, unmarried. Salary £75 per annum, with apartments, board, lodging, and washing.

SHEFFIELD, EAST END BRANCH OF THE CHILDREN'S HOSPITAL.—House Surgeon for Out-patient Department only. Salary £75 per annum, with board and residence.

SHEFFIELD ROYAL INFIRMARY.—House Surgeon and Ophthalmic House Surgeon for six months. Salary £80 per annum each, with board and residence.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Junior House Surgeon. Salary at rate of £100 per annum, with rooms, board, and washing.

STOKE-ON-TRENT, NORTH STAFFORDSHIRE INFIRMARY, Hartshill.—House Physician, unmarried. Also Casualty and Out-patient Officer, unmarried, for six months. Salary at rate of £110 per annum each, with board, residence, and washing.

STROUD GENERAL HOSPITAL.—House Surgeon. Salary £120 per annum, with board, lodging, and washing.

SUNDERLAND BOROUGH ASYLUM, Ryhope.—Assistant Medical Officer. Salary £200 per annum.

SUNDERLAND ROYAL INFIRMARY.—Junior House Surgeon. Salary £120 per annum, with board, residence, and laundry.

TUNBRIDGE WELLS GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, &c.

WAKEFIELD, WEST RIDING ASYLUM.—Locum Tenens Assistant Medical Officer. Apartments, board, &c.

WALSALL AND DISTRICT HOSPITAL.—Senior House Surgeon and Assistant House Surgeon. Salary £150 and £110 per annum respectively, with board, residence, and laundry.

WARRINGTON, LANCASHIRE COUNTY ASYLUM, Winwick.—Locum Tenens Medical Officer, unmarried, for about five months. Salary 5 guineas per week, with apartments, board, attendance, and washing.

WEST HARTLEPOOL, CAMERON HOSPITAL.—House Surgeon, unmarried. Salary £120 per annum, with rooms, board, &c.

WEST LONDON HOSPITAL, Hammersmith-road, W.—Honorary Medical Registrar.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Junior House Surgeon. Salary £100 per annum, with board, apartments, and washing.

WOLVERHAMPTON COUNTY BOROUGH EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary at rate of £250 per annum.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House Surgeon. Salary £100 per annum, with apartments, board, and laundry.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Resident Medical Officer. Also Two House Surgeons. Salary in each case £125 per annum, with board, rooms, and laundry.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Acts at Colnbrook, in the county of Bucks; and at Leicester, in the county of Leicester.

THE Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Bloomsbury and Hampstead, Whitechapel, and Westminster County Courts. Applications should be made to the Private Secretary, Home Office, Whitehall, S.W.

Births, Marriages, and Deaths.

BIRTHS.

FRENCH.—On March 30th, at 135, Harley-street, London, W., the wife of J. Gay French, M.S. Lond., F.R.C.S., of a son.

GILLIES.—On April 4th, at "Walden," Woodhouse-road, North Finchley, to Dr. and Mrs. Robert Gray Gillies, a daughter.

KELLOND-KNIGHT.—On April 3rd, at Ritherdon-road, Balham, S.W., the wife of Staff-Surgeon H. A. Kellond-Knight, Royal Navy, of a son.

LENDRUM.—On April 5th, at Manchester-street, Werneth, Oldham, to Dr. and Mrs. J. B. Lendrum, a daughter.

O'CALLAGHAN.—On April 1st, at Dorset House, Dorset-square, the wife of Lieutenant-Colonel D. M. O'Callaghan, R.A.M.C., of a son.

MARRIAGES.

BARTLEY—DAVIES.—On March 31st, at St. Jude's, South Kensington. Lieutenant-Colonel A. G. Bartley, R.A.M.C. (retired), to Anna Mary, widow of Alexander Davies, of "Glandwr," Welshpool, and elder daughter of the late Charles Moiser, of South Kensington.

COOK—KEED.—On April 4th, at Emmanuel Church, West Hampstead, Joseph Basil Cook, M.D., D.P.H., to Evelyn Russell, eldest daughter of the late Charles Keed, and Mrs. Keed, of Crowhurst, Sussex.

WITHERS GREEN—CARR.—On April 2nd, at St. Cuthbert's, West Hampstead, Dr. Alfred Withers Green to Florence Emily Carr, elder daughter of Ebenezer and Eliza Carr, of Plympton-road, N.W.

DEATHS.

PURNELL.—On April 2nd, at his residence, Newlyn, New-street, Wells Somerset, Richard Purnell, M.D., J.P. for the city of Wells and for the county of Somerset, in his 75th year.

WARNER.—On April 1st, at Rydal, Woodford Green, Essex, Percy Warner, M.R.C.S., L.R.C.P., in his 61st year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE DANGERS OF SYPHILIS AND THE QUESTION OF STATE CONTROL.

WE have received from Dr. Helen Wilson, the honorary secretary of the British branch of the International Federation for the Abolition of State Regulation of Vice, a reprint of a discussion which took place at the Seventeenth International Congress of Medicine in August last, dealing with the dangers to the community of syphilis. The discussion took place in the joint session of the sections of dermatology and forensic medicine, and the reprinted report includes papers by Professor A. Blaschko, of Berlin, Professor E. Finger, of Vienna, and Professor E. Gaucher, of Paris, the last paper being contributed jointly with Professor H. Gougerot. The gist of the discussion was reported in THE LANCET of August 16th, 1913, and a paper communicated to the meeting by the late Major H. C. French was also published in our columns in full, which does not appear in the reprint. The discussion resulted, it may be remembered, in the following resolution being put to the members of the joint session and carried unanimously: "That, sensible of the ravages wrought by syphilis in the health of the community, and deploring the inadequacy of existing facilities for checking its dissemination, the International Medical Congress calls upon the Governments of all the countries here represented (1) To institute a system of confidential notification of the disease to a sanitary authority, wherever such notification does not already obtain; (2) to make systematic provision for the diagnosis and treatment of all cases of syphilis not otherwise provided for." Thereupon the Royal Commission on Venereal Diseases followed.

THE USE OF ACADEMIC MEDALS.

To the Editor of THE LANCET.

SIR,—Some little time ago I had the honour of being awarded a gold medal with the degree of Doctor of Medicine by the University of London. I was delighted, my family very pleased, and for a week it was on show to my friends, after which it was locked away in a drawer, where I suppose it will remain till such time as I have ceased to have earthly interests, when someone will come upon it probably with the remark: "Hullo, I did not know poor old So-and-so got a gold medal!"

The medal *per se*, therefore, seems to have little use. But it is worth £20 or £25. Would it not be better, if its monetary worth alone be in question, to award a money prize? But if it is regarded, as I prefer to look upon the medal, as a mark of distinction, I suggest that its proper use should be to adorn the academic costume of which it might be considered to be a part. Provided with a ring and ribbon, to be worn possibly round the neck, it would form, I suggest, a not unbecoming addition to the gown which the graduate is entitled to wear by reason of his degree—for which the medal, too, was awarded.—I am, Sir, yours faithfully,

March 27th, 1914. MEDALLIST.

BLIND JACK OF KNARESBOROUGH.

THE triumphs of the blind over their infirmity have recently furnished a text to several correspondents, and Blind Jack of Knaresborough has been more than once mentioned. He was a noted road engineer, whose name was John Metcalfe, and just over a century ago was much talked about and written about. He was born in 1717 and died in 1810, at the age of 93, and an epitaph on his tombstone commemorates his work and courage, showing that a blind man can do many things which would not be thought possible, and that pluck and perseverance combined with common-sense will overcome many difficulties. A little pocket biography which was published of him ran into several editions years after he was dead, and detailed many anecdotes of his intelligence and, for a blind man, extraordinary adventures. This book is entitled "The Life and Wonderful Adventures of John Metcalfe, commonly called Blind Jack of Knaresborough, who lost his sight in his infancy, yet became eminent as a musician, as a soldier, a guide over the then unenclosed forest, a common carrier, a builder of bridges and houses, a contractor for making turnpike roads, and a skilful player at whist." The author says the reader "will discern in every page a proof of the adage that 'truth is far stranger than fiction.'" How John Metcalfe lived, eloped with a wife, and made a fortune is also told in the Dictionary of National Biography. He acted at first, before he made his fortune, as guide to many people over the roads he could not himself see, the people whom he led being astonished afterwards

to learn that they had been led for miles by a blind man, they being of the opinion that his eyes only looked a bit queer, as if he had been spirit drinking. A blind man who knows the road well may be a better guide in the dark or fog than a man with eyesight, but Blind Jack seems to have been better by daylight in familiar places than many with the due physical equipment.

DENTAL EDUCATION.

To the Editor of THE LANCET.

SIR,—I wish to draw your attention to two paragraphs which appear in THE LANCET of March 28th. One is on p. 911 and is headed "The Future of Dental Education," and the other appears under "News from Scotland," on p. 923.

Both these paragraphs refer to a meeting of unregistered men, who call themselves the "Incorporated Dental Society." From the publicity given in your journal I am afraid that your readers may have formed the impression that this was a society composed of dentists. I shall, therefore, be glad if you will correct this impression.

I am, Sir, yours faithfully,
FRANK J. PEARCE,
Hon. Secretary British Dental Association.

Hanover-square, London, W., March 31st, 1914.

SLEEPING SICKNESS IN NYASALAND.

Mr. H. Hearsey, principal medical officer in the Nyasaland Protectorate, in Part XXII. of his "Diary," reports that 19 additional cases of sleeping sickness were notified during the four months ending Dec. 31st, 1913: 1 from Marimba district by Dr. Morgan, 2 from Upper Shiré district by Dr. Sanderson, and 16 from the proclaimed area of the Dowa district by Dr. Conran. Six were discovered in September, 4 each in October and November, and 5 in December. These 19 cases bring the total reported up to 172, of which 64 occurred in 1913. The prominent details of the cases are given. The preventive measures in the proclaimed area of the Dowa district are reported to be attended with good results.

COCOANUTS AND COKERNUTS.

To the Editor of THE LANCET.

SIR,—Some years ago I read, I believe it must have been in a Customs tariff book, that the spelling "cokernut" was adopted by the Customs to avoid confusion with "cocoanut." I have tried to get on the track of this statement again, but although I have searched dictionaries and trade-books I cannot rediscover the printed statement which I unfortunately failed to make an exact note of. It seemed to me to be an interesting piece of information which I had not read before, and the dictionaries do not enlighten me. My memory is usually good for such facts, so I do not think that I can have imagined it. A cart passed me in the street last week with the title "Cokernut Merchant" painted on it, which recalled my fruitless search a year ago for the origin of the variant spelling, as also did the cokernut cake which the little boy Starchfield had eaten just previous to his death in the North London railway train.

I am, Sir, yours faithfully,
London, April 6th, 1914. W. F.

THE MILWARD FUND.

Mr. William Sheen, F.R.C.S., 2, St. Andrew's-crescent, Cardiff, honorary treasurer of this fund, acknowledges a further subscription of £10 from the Blackburn Division of the British Medical Association, per J. Shearer, honorary secretary.

A REPUDIATION.

To the Editor of THE LANCET.

SIR,—My attention has been drawn to a publication in the "Parsee" vernacular paper associating my name with intracapsular extraction of cataract. I beg to state that the said article has appeared without my knowledge and consent.—I am, Sir, yours faithfully,

B. P. BANAJI, F.R.C.S.I.,
Ophthalmic Surgeon, Parsee General Hospital.

Fort, March 13th, 1914.

THE SYMBOL ℥.

Mr. Chas. Olley.—The question of the meaning of the symbol ℥ has been raised at frequent intervals. On one hand it has been argued that it signified the avoirdupois ounce of 437½ grains, and on the other that it signified the apothecaries' ounce of 480 grains. But there can be no doubt, in our opinion, that it stands for the apothecaries' ounce. In the *Pharmaceutical Journal* of Dec. 15th, 1877 (p. 477), Professor Redwood explained the legal position of the question, and his explanation left no doubt whatever that ℥i. means 480 grains. Professor Redwood's view was supported by a member of the Pharmacopœia Committee of the General Medical Council to whom he submitted his statement.

A BURLESQUE insurance policy for the benefit of its subscribers, printed in the March number of the *St. Thomas's Hospital Gazette*, will, we think, add to the reputation for wit and high spirits which this students' journal has built up during recent years. It is delightfully funny without being offensive.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

A DIARY OF CONGRESSES.

WE shall publish this diary from time to time that our readers may have under their hands the dates of the approaching scientific Congresses. It is unnecessary to issue the lists of all these functions week by week, and we propose to make only such gatherings as will occur in the immediate future the subject of regular announcement. The following Congresses, Conferences, and Exhibitions are announced:—

April 13th and 14th (Berlin).—Thirteenth Congress of the German Orthopædic Society.
„ 13th–16th (New York).—Fourth Congress of the International Surgical Society. (President: Prof. Depage, Bruxelles.)
„ 15th–18th (Berlin).—Forty-third Congress of the erman Surgical Society.
„ 19th–21st (Berlin).—"Jubilee" Congress of the German Röntgen Society.
„ 20th–23rd (Wiesbaden).—Thirty-first German Congress for Internal Medicine.
„ 27th–May 1st (London, Royal Horticultural Hall).—Nursing Conference and Exhibition.
May 1st–Nov. 1st (Lyons).—International Town Hygiene Exhibition.
„ 15th–Oct. 15th (Berne).—Swiss National Exhibition.
May (London, Imperial Institute).—Victoria League Imperial Health Conference.
May–October (London, Shepherd's Bush).—Anglo-American Exposition.
June 8th–10th (Berne).—Seventh International Dairy Congress.
„ 18th–24th (London, Church House, Westminster).—International Conference on the Blind.
June–July (Groningen).—University of Groningen 300th Anniversary Celebration.
July 6th–11th (Blackpool).—Twenty-ninth Congress of the Royal Sanitary Institute.
„ 8th–10th (Oxford).—Ophthalmological Congress.
„ 8th–13th (Edinburgh).—Congress of the Royal Institute of Public Health.
„ 21st–23rd (Chester).—British Pharmaceutical Conference.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

THURSDAY.

SECTION OF DERMATOLOGY (Hon. Secretaries—J. M. H. MacLeod, S. E. Dore): at 4.30 P.M.

Cases:
Dr. Graham Little: (1) Pityriasis Rubra Pilaris; (2) Von Recklinghausen's Disease with General Analgesia.
Dr. Pernet: Double Primary Chancre of the Lips in a Man.
Dr. W. Knowsley Sibley: Nævus Araneus.

FRIDAY.

SECTION OF OTOLOGY (Hon. Secretaries—G. J. Jenkins, W. M. Mollison): at 5 P.M.

Cases and Specimens:
Will be shown by Mr. H. L. Whale, Mr. G. J. Jenkins, and others.

SECTION OF ELECTRO-THERAPEUTICS (Hon. Secretaries—Cecil R. C. Lyster, S. Gilbert Scott): at 8.30 P.M.

Papers:
Dr. R. W. A. Salmond: Some Experiments on X Ray Filtration.
Dr. Curtis Webb: Electrolysis in the Treatment of Hæmorrhoids.
Dr. C. Russ: The Measurement of Radium Rays as Used Clinically.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

FRIDAY.—5 P.M., Prof. Keith: Specimens illustrating Difficulties in the Diagnosis of Sex. (Museum Demonstration.)

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Armour: Operations. Dr. Pritchard: Bacterial Therapy Department. Mr. B. Harman: Diseases of the Eye.

TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women, and Diseases of the Eye.

THURSDAY.—9 A.M., Dr. Bernstein: Bacterial Therapy Department. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Armour: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear, and Diseases of the Eye. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

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TUESDAY.—Out-patient Demonstrations:—10 A.M., Medical. Mr. Cole: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Mr. R. Carling: Surgery. 3.15 P.M., Dr. G. Rankin: Medicine. 4.15 P.M., Sir Malcolm Morris: Skin.

WEDNESDAY.—Out-patient Demonstrations: 10 A.M., Dr. H. B. Carlill: Medical. Mr. Cecil Rowntree: Surgical. 11 A.M., Mr. R. B. Bickerton: Eye.—2 P.M., Mr. L. V. Cargill or Mr. Choyce: Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.15 P.M., Mr. Cargill: Eye Clinique. 4.30 P.M., Mr. C. C. Choyce: Surgery.

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FRIDAY.—Out-patient Demonstrations:—10 A.M., Dr. C. E. Zundel: Medical. Mr. Cole: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Sir John Rose Bradford: Medicine. 3.15 P.M., Mr. L. McGavin: Surgery. 2.15 P.M., Special Lecture:—Sir J. Rose Bradford: Dropsy and its Treatment.

SATURDAY.—Out-patient Demonstrations: 10 A.M., Dr. H. R. Prentice: Medical. Mr. Cecil Rowntree: Surgical. 11 A.M., Mr. R. B. Bickerton: Eye.—10 A.M., Col. Barry: Radiography.

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TUESDAY.—9 A.M., Laryngological Department, Mr. Mant. 1.30 P.M., Department for the Prevention of Consumption. 2 P.M., Out-patient Department, Dr. M. Leslie, Dr. B. King; Operations, Mr. A. Evans. 3 P.M., Wards, Dr. White. 4 P.M., Wards, Dr. M. Leslie.

WEDNESDAY.—2 P.M., Wards, Dr. A. Davies; Out-patient Department, Dr. Drysdale, Dr. Kellie. 4 P.M., Wards, Dr. Drysdale. 4.30 P.M., Roentgen Ray Department, Dr. Jordan.

THURSDAY.—9.30 A.M., Dental Department, Mr. G. Thomson. 10 A.M., Cardiac Department, Dr. Stott. 1.30 P.M., Department for the Prevention of Consumption. 2 P.M., Out-patient Department, Dr. Phear, Dr. S. Thompson. 4.30 P.M. Laryngological Department, Mr. Mant.

FRIDAY.—1.30 P.M., Department for the Prevention of Consumption. 2 P.M., Wards, Dr. Calvert; Out-patient Department, Dr. M. Leslie, Dr. B. King. 5 P.M., Lecture-Demonstration:—Mr. Thomson: The Teeth in Relation to Pulmonary Tuberculosis.

SATURDAY.—10 A.M., Out-patient Department, Dr. Drysdale, Dr. Kellie. 11.30 A.M., Roentgen Ray Department, Dr. Jordan.

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FRIDAY.—Lecture:—4 P.M., Mr. McDonagh: The Biology of Syphilis.
SATURDAY.—Clinic:—2 P.M., Mr. McDonagh.

For further particulars of the above Lectures, &c., see Advertisement Pages.

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(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, April 7th, 1914.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
April 1	29·97	S.W.	...	104	67	49	50	55	Fine
" 2	29·87	S.W.	...	87	60	51	50	52	Fine
" 3	29·98	W.	...	92	60	44	45	47	Fine
" 4	29·93	S.	...	76	53	47	47	49	Raining
" 5	29·78	S.W.	0·10	81	57	46	47	49	Cloudy
" 6	29·54	N.W.	0·20	103	58	46	45	50	Cloudy
" 7	29·44	W.	0·09	99	52	43	43	46	Cloudy

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